C7H61
C7H61-L

USER'S MANUAL

Revision 1.0c

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Manual Revision 1.0c

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Preface

This manual is written for system integrators, PC technicians and knowledgeable PC users. It provides information for the installation and use of the SUPERO® C7H61 motherboard.

About This Motherboard

The SUPERO® C7H61 supports a single 2nd and 3rd generation Intel® Core™ i7/i5/i3, Pentium, Celeron desktop processor in an LGA 1155 socket. With the Intel® H61 Express chipset built in, the C7H61 motherboard offers excellent balance of price/performance for entry level or embedded applications. Please refer to our website (http://www.supermicro.com/products/) for processor and memory support updates. This product is intended to be installed and serviced by professional technicians.

Manual Organization

Chapter 1 describes the features, specifications and performance of the motherboard, and provides information on the Intel H61 Express chipset.

Chapter 2 provides hardware installation instructions. Read this chapter when installing the processor, memory modules and other hardware components into the system. If you encounter any problems, see **Chapter 3**, which describes troubleshooting procedures for video, memory and system setup stored in the CMOS.

Chapter 4 includes an introduction to the BIOS, and provides detailed information on running the CMOS Setup utility.

Appendix A provides BIOS Error Beep Codes.

Appendix B lists software program installation instructions**.**

Appendix C contains UEFI BIOS Recovery instructions.

Conventions Used in the Manual:

Special attention should be given to the following symbols for proper installation and to prevent damage done to the components or injury to yourself:

Danger/Caution: Instructions to be strictly followed to prevent catastrophic system failure or to avoid bodily injury

Warning: Critical information to prevent damage to the components or data loss.

Important: Important information given to ensure proper system installation or to relay safety precautions.

Note: Additional Information given to differentiate various models or provides information for correct system setup.

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Chapter 1

Introduction

1-1 Overview

Checklist

Congratulations on purchasing your computer motherboard from an acknowledged leader in the industry. Supermicro boards are designed with the utmost attention to detail to provide you with the highest standards in quality and performance.

Please check that the following items have all been included with your motherboard. If anything listed here is damaged or missing, contact your retailer.

The following items are included in the retail box.

- One (1) Supermicro Motherboard
- Six (6) SATA cables
- One (1) I/O shield
- One (1) Quick Reference Guide

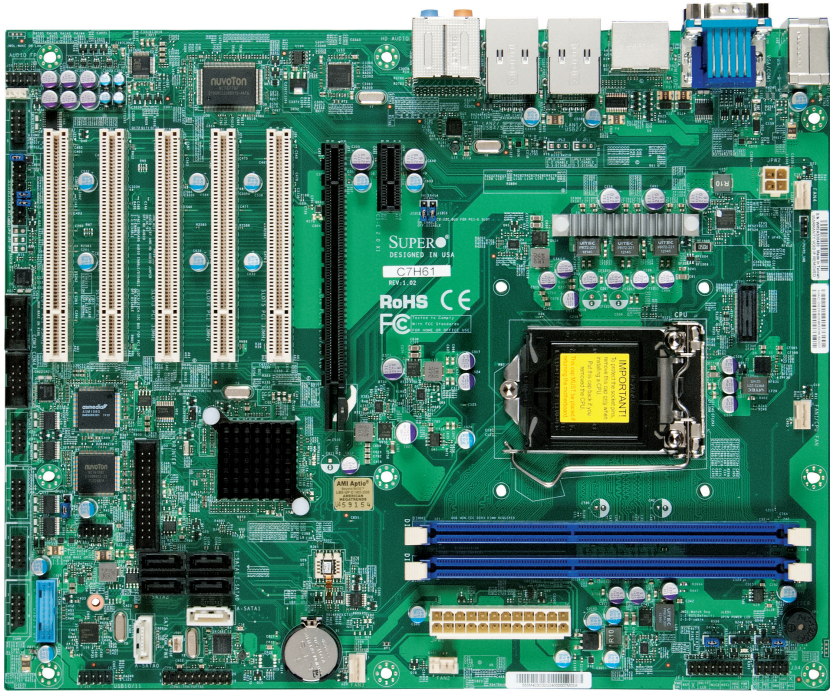
Note: For your system to work properly, please follow the links below to download all necessary drivers/utilities and the user's manual for your motherboard.

- SMCI product manuals: http://www.supermicro.com/support/manuals/
- Product Drivers and utilities: ftp://ftp.supermicro.com/

Warning: For safety considerations, please refer to the complete list of safety warnings posted on the Supermicro website at http://www.supermicro.com/about/policies/safety_information.cfm.

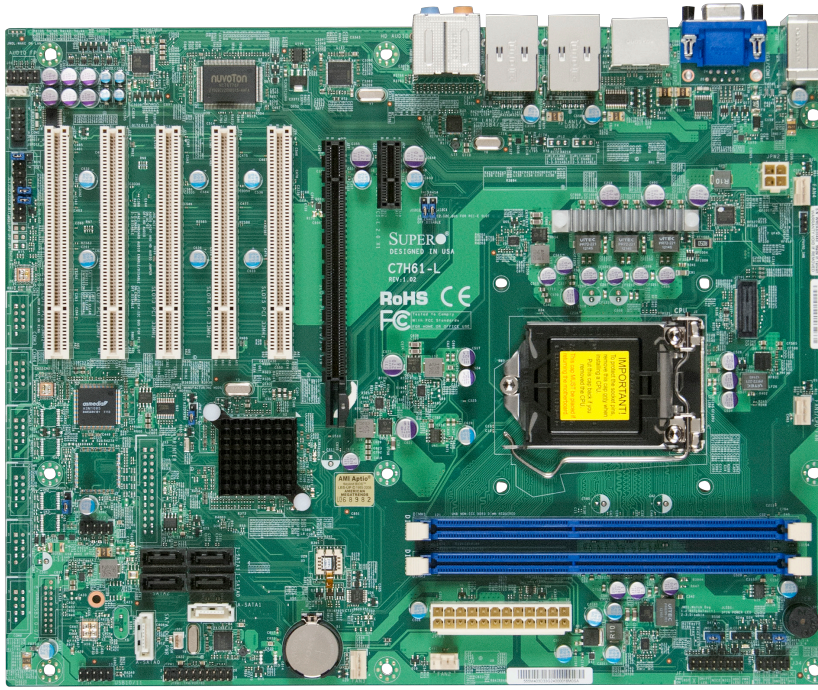
If you have any questions, please contact our support team at support@supermicro.com.

SUPERMICRO C7H61 Motherboard Image



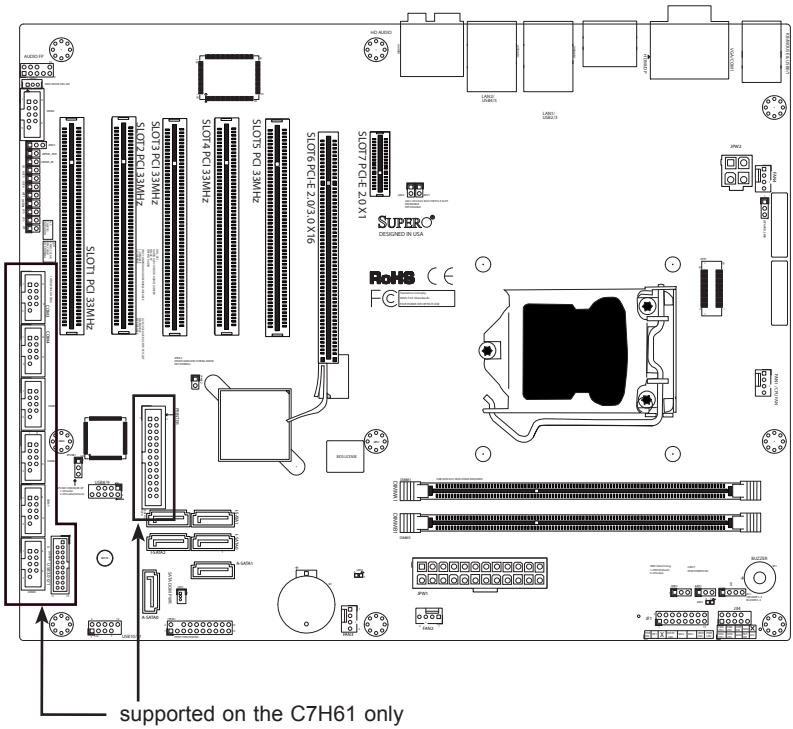
Note: All graphics shown in this manual were based upon the latest PCB Revision available at the time of publishing of the manual. The motherboard you've received may or may not look exactly the same as the graphics shown in this manual.

SUPERMICRO C7H61-L Motherboard Image



Note: All graphics shown in this manual were based upon the latest PCB Revision available at the time of publishing of the manual. The motherboard you've received may or may not look exactly the same as the graphics shown in this manual.

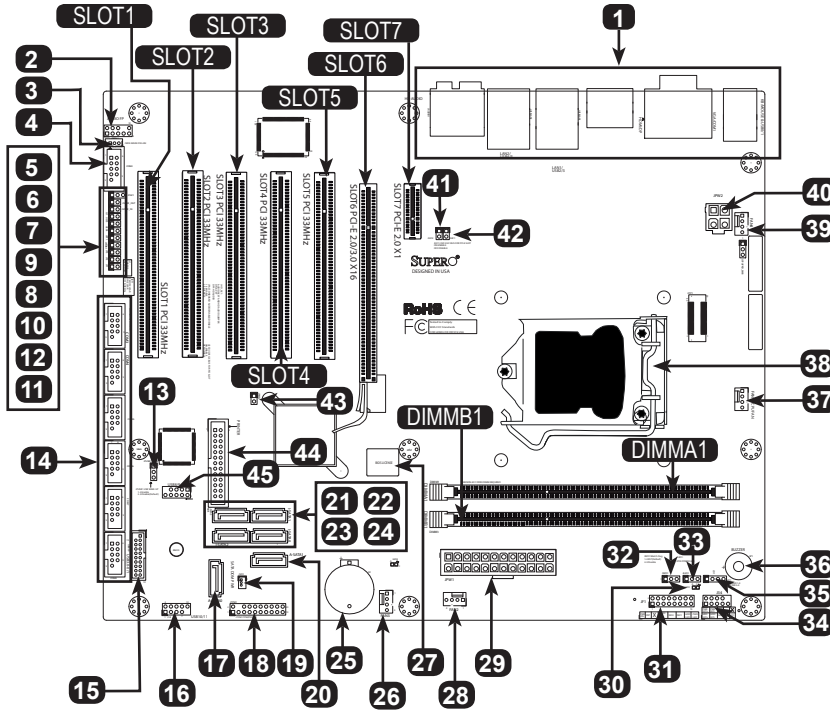
C7H61 Motherboard Layout



Important Notes to the User

- See Chapter 2 for detailed information on jumpers, I/O ports and JF1 front panel connections.
- "■" indicates the location of "Pin 1".
- Jumpers not indicated are for testing only.
- When LED1 (Onboard Standby Power LED Indicator) is on, the system is plugged in. Unplug the power cable before installing or removing any components.

C7H61 Quick Reference



Jumpers			
#	Name	Description	Default
5	JPAC1	Audio Enable	Pins 1-2 (Enabled)
8,10	JI2C3,JI2C4	SMB Header for PCI Slots	C7H61-L: Short (Enabled), C7H61: Open (Disabled)
12	JBT1	CMOS Reset	Open (Disabled)
13	JPUSB1	USB Wake-Up	Pins 2-3 (Disabled)
32	JWD1	Watch Dog Timer Reset	Pins 1-2 (Reset)
41,42	JI2C2,JI2C1	SMB Header for PCIE Slots	Open (Disabled)
43	JPME2	Intel ME Manufacturing Mode	Pins 1-2 (Disabled)

Connectors		
#	Name	Description
1	Backpanel I/O	See "Connectors/IO Ports", page 1-13
2	AUDIO FP	Front Panel Audio Header
3	JWOL	Legacy Wake-On-LAN Header
4,14	COM2, COM3~8	COM2 Header, COM3~8 (supported on the C7H61 only)
6,7	S/PDIF OUT, S/PDIF IN	S/PDIF OUT/IN Digital Audio Headers
9	JL1	Chassis Intrusion Header
11	JWOR	Wake-On-Ring Header
15	USB 3.0 1/0	USB Header 1/0 (3.0) (supported on the C7H61 only)
16,45	USB10/11,8/9	USB 2.0 Header 10/11,8/9
17,20	A-SATA 0,1 (ASMedia)	SATA 3.0 Ports (up to 6Gb/s)
18	JTPM1	Trusted Platform Module (TPM) Header
19	JSD1	Disk-On-Module (DOM) Power Header
24,22,23,21	I-SATA 0,1,2,3 (Intel)	SATA 2.0 Ports
25	B1	System Battery
26,28,37,39	FAN 3,2,1,4	System FAN Headers 3,2,1 (CPU FAN),4
27	U5	BIOS Chip
29,40	JPW1,JPW2	24-Pin, 4-Pin Aux Power Supply Connectors
31	JF1	Front Panel Control Header
33	JLED1	3-Pin Power LED Header
34	Test Header	Reserved for OEM
35	JD1	External Speaker Header (Pins 2-3 shorted for internal buzzer)
36	SP1	Internal Buzzer
38	CPU	Socket H2 for an LGA 1155 CPU
44	PRINTER	LPT1 Header (supported on the C7H61 only)

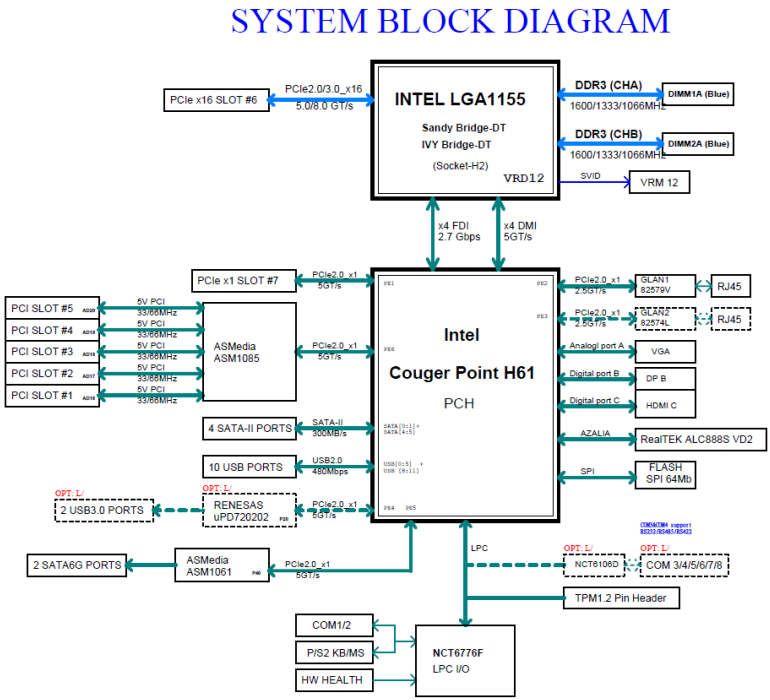
LED Indicators				
#	Name	Description	Color/State	Status
30	LED1	Onboard Standby PWR LED	Green: Solid on	Standby Power is On

Motherboard Features

CPU	Single 2nd and 3rd generation Intel® Core™ i7/i5/i3, Pentium, Celeron desktop processor, LGA 1155 socket	
Memory	Supports up to 16GB of Unbuffered (UDIMM) non-ECC DDR3 1600/1333/1066 MHz in 2 memory slots.	
	Supports dual-channel memory bus	
	DIMM sizes	
	UDIMM	1 GB, 2 GB, 4GB, and 8GB
Chipset	Intel® H61 Express	
Expansion Slots	One (1) PCI Express 2.0 x1 slot	
	One (1) PCI Express 2.0/3.0 x16 slot	
	Five (5) PCI 33 MHz slots	
Network Connections	Two (2) Gigabit Ethernet Controllers: LAN1: Intel 82579V LAN2: Intel 82574L	
	Two (2) RJ-45 Rear I/O Panel Connectors with Link and Activity LEDs	
I/O Devices	**SATA Connections**	
	SATA 3.0 (6Gb/s)	Two (2) A-SATA 0~1, via ASMedia
	SATA 2.0 (3Gb/s)	Four (4) I-SATA 0~3, via Intel H61
	USB Devices	
	Six (6) USB 2.0 ports on the rear I/O panel	
	All models: Four (4) Front Accessible USB 2.0 ports on two headers C7H61 only: Two (2) Front Accessible USB 3.0 ports on one header	
	Keyboard/Mouse	
	One shared PS/2 Keyboard/Mouse port on the I/O backpanel	
	Serial (COM) Ports	
	C7H61: Seven (7) Serial Port headers (COM2~COM8) C7H61-L: One (1) Serial Port header (COM2)	
	C7H61: One (1) Serial Port on the back panel (COM1)	
	Audio	
	Five (5) Female Mini Jacks for High Definition Audio on the Back Panel	
	Front Panel Audio Header	
	One (1) SP/DIF Optical Out on the back panel	
	SP/DIF In and SP/DIF Out Headers	

	Super I/O
	Nuvoton NCT6776F
BIOS	64 Mb AMI BIOS® SPI Flash BIOS
	Play and Plug (PnP), PCI 3.0, ACPI 4.0, USB Keyboard and SMBIOS 2.7
Power Configuration	ACPI/ACPM Power Management
	Main Switch Override Mechanism
	Keyboard Wake-up from Soft-Off
	Internal/External Modem Ring-On
	Wake-On-LAN (WOL) Header
	Power-on mode for AC power recovery
PC Health Monitoring	**CPU Monitoring**
	Onboard voltage monitors for Vcore, BAT, 3.3V, 3VSB, 5V, 12V, VTT CPU, VDIMM
	CPU 3+1 phase switching voltage regulator
	CPU/System overheat LED and control
	CPU Thermal Trip support
	Intel Adaptive Thermal Monitor support
	Fan Control
	Fan status monitoring with firmware 4-pin (Pulse Width Modulation) fan speed control
	Low noise fan speed control
System Management	PECI (Platform Environment Configuration Interface) 3.0 support
	System resource alert via SuperDoctor® III
	SuperDoctor III, Watch Dog
	Chassis Intrusion header and detection
CD Utilities	BIOS flash upgrade utility
	Drivers and software for Intel® H61 Express chipset utilities (available for download)
Other	ROHS 6/6 (Full Compliance, Lead Free)
Dimensions	ATX form factor (12.0" x 9.6")

C7H61 Block Diagram



System Block Diagram

Note: This is a general block diagram and may not exactly represent the features on your motherboard. See the Motherboard Features pages for the actual specifications of each motherboard.

1-2 Chipset Overview

The Intel H61 Express Chipset is an entry-level product designed to deliver the most critical features at the best possible price point. Based on the capabilities of this chipset, the C7H61 motherboard utilizes the chipset's design to deliver a cost-effective price point without sacrificing the needed performance for an entry-level or embedded platform.

Intel H61 Express Chipset Features

- Integrated Graphics
- Intel® Clear Video Technology
- Dual Display Capable
- PCI Express 2.0/3.0 Support
- Up to four (4) SATA Ports

1-3 Special Features

Recovery from AC Power Loss

Basic I/O System (BIOS) provides a setting for you to determine how the system will respond when AC power is lost and then restored to the system. You can choose for the system to remain powered off, (in which case you must press the power switch to turn it back on), or for it to automatically return to a power-on state. See the Advanced BIOS Setup section to change this setting. The default setting is **Last State**.

1-4 PC Health Monitoring

This section describes the PC health monitoring features of the board. All have an onboard System Hardware Monitoring chip that supports PC health monitoring. An onboard voltage monitor will scan these onboard voltages continuously: Vcore, BAT, 3.3V, 3VSB, 5V, 12V, VTT CPU, VDIMM. Once a voltage becomes unstable, a warning is given, or an error message is sent to the screen. The user can adjust the voltage thresholds to define the sensitivity of the voltage monitor.

Fan Status Monitor with Firmware Control

PC health monitoring in the BIOS can check the RPM status of the cooling fans. The onboard CPU and chassis fans are controlled by Thermal Management via BIOS (under the Hardware Monitoring section in the Advanced Setting).

Environmental Temperature Control

The thermal control sensor monitors the CPU temperature in real time and will turn on the thermal control fan whenever the CPU temperature exceeds a user-defined threshold. The overheat circuitry runs independently from the CPU. Once the thermal sensor detects that the CPU temperature is too high, it will automatically turn on the thermal fans to prevent the CPU from overheating. The onboard chassis thermal circuitry can monitor the overall system temperature and alert the user when the chassis temperature is too high.

Note: To avoid possible system overheating, please be sure to provide adequate airflow to your system.

System Resource Alert

This feature is available when the system is used with Supero Doctor III in the Windows OS environment or used with Supero Doctor II in Linux. Supero

Doctor is used to notify the user of certain system events. For example, you can also configure Supero Doctor to provide you with warnings when the system temperature, CPU temperatures, voltages and fan speeds go beyond predefined thresholds.

1-5 ACPI Features

ACPI stands for Advanced Configuration and Power Interface. The ACPI specification defines a flexible and abstract hardware interface that provides a standard way to integrate power management features throughout a PC system, including its hardware, operating system and application software. This enables the system to automatically turn on and off peripherals such as CD-ROMs, network cards, hard disk drives and printers.

In addition to enabling operating system-directed power management, ACPI also provides a generic system event mechanism for Plug and Play, and an operating system-independent interface for configuration control. ACPI leverages the Plug and Play BIOS data structures, while providing a processor architecture-independent implementation that is compatible with Windows XP, Windows Vista, and Windows 2008 Operating Systems.

Slow Blinking LED for Suspend-State Indicator

When the CPU goes into a suspend state, the chassis power LED will start to blink to indicate that the CPU is in suspend mode. When the user presses any key, the CPU will "wake up", and the LED will automatically stop blinking and remain on.

1-6 Power Supply

As with all computer products, a stable power source is necessary for proper and reliable operation. It is even more important for processors that have high CPU clock rates.

This motherboard accommodates 24-pin ATX power supplies. Although most power supplies generally meet the specifications required by the CPU, some are inadequate. In addition, the 12V 4-pin power connector located at JPW2 is also required to ensure adequate power supply to the system. Also your power supply must supply 1.5A for the Ethernet ports.

Warning! 1. To prevent damage to the power supply or motherboard, please use a power supply that contains a 24-pin and a 4-pin power connectors. Be sure to connect these connectors to the 24-pin (JPW1) and the 4-pin (JPW2) power connectors on the motherboard.

2. To provide adequate power to SATA devices, please connect the SATA DOM PWR connector (JWF1) to the power supply.

It is strongly recommended that you use a high quality power supply that meets ATX power supply Specification 2.02 or above. It must also be SSI compliant. (For more information, please refer to the web site at http://www.ssiforum.org/). Additionally, in areas where noisy power transmission is present, you may choose to install a line filter to shield the computer from noise. It is recommended that you also install a power surge protector to help avoid problems caused by power surges.

1-7 Super I/O

The Super I/O supports two high-speed, 16550 compatible serial communication ports (UARTs). Each UART includes a 16-byte send/receive FIFO, a programmable baud rate generator, complete modem control capability and a processor interrupt system. Both UARTs provide legacy speed with baud rate of up to 115.2 Kbps as well as an advanced speed with baud rates of 250 K, 500 K, or 1 Mb/s, which support higher speed modems.

The Super I/O provides functions that comply with ACPI (Advanced Configuration and Power Interface), which includes support of legacy and ACPI power management through an SMI or SCI function pin. It also features auto power management to reduce power consumption.

Chapter 2

Installation

2-1 Static-Sensitive Devices

Electrostatic-Discharge (ESD) can damage electronic components. To avoid damaging your system board, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Handle the board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.
- Use only the correct type of onboard CMOS battery. Do not install the onboard battery upside down to avoid possible explosion.

Unpacking

The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure that the person handling it is static protected.

2-2 Processor and Heatsink Installation

Warning: When handling the processor package, avoid placing direct pressure on the label area of the fan.

Important:

Always connect the power cable last, and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.

If you buy a CPU separately, make sure that you use an Intel-certified multi-directional heatsink only.

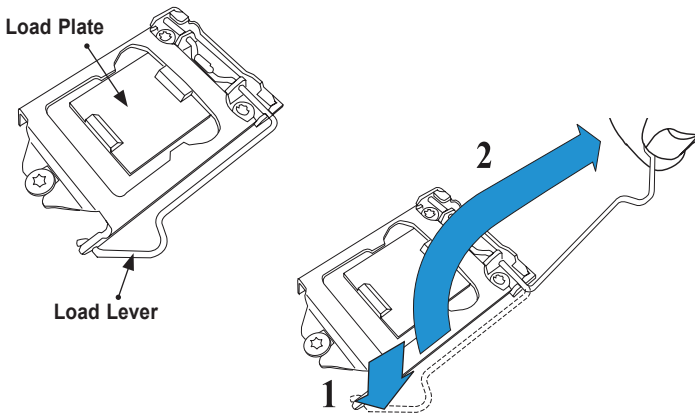
Make sure to install the system board into the chassis before you install the CPU heatsink.

When receiving a server board without a processor pre-installed, make sure that the plastic CPU socket cap is in place and none of the socket pins are bent; otherwise, contact your retailer immediately.

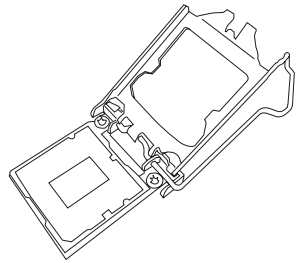
Refer to the Supermicro website for updates on CPU support.

Installing the LGA1155 Processor

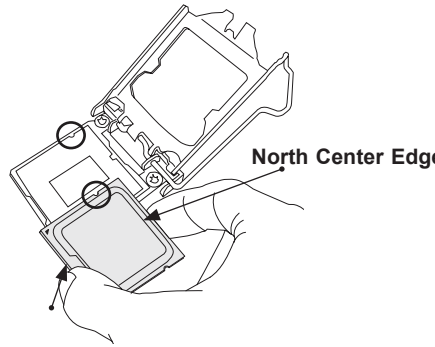
1. Press the load lever to release the load plate, which covers the CPU socket, from its locking position.



2. Gently lift the load lever to open the load plate. Remove the plastic cap.

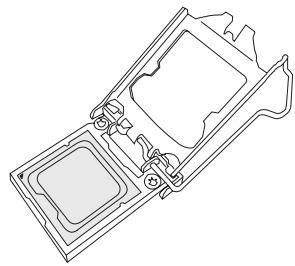


3. Use your thumb and your index finger to hold the CPU at the North center edge and the South center edge of the CPU.

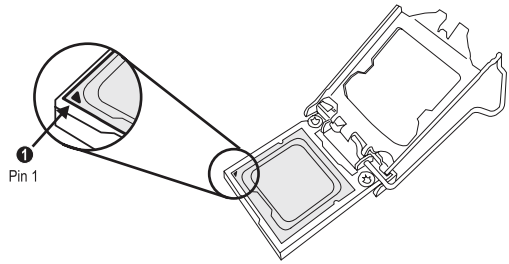


South Center Edge

4. Align the CPU key that is the semi-circle cutouts against the socket keys. Once it is aligned, carefully lower the CPU straight down into the socket. (Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically.

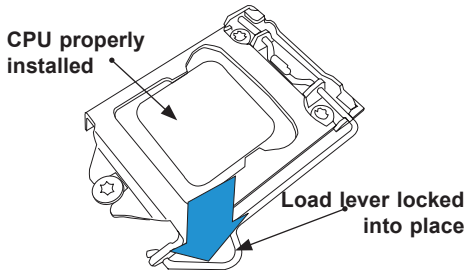


5. Do not rub the CPU against the surface or against any pins of the socket to avoid damaging the CPU or the socket.)



6. With the CPU inside the socket, inspect the four corners of the CPU to make sure that the CPU is properly installed.

7. Use your thumb to gently push the load lever down to the lever lock.



Warning: You can only install the CPU inside the socket only in one direction. Make sure that it is properly inserted into the CPU socket before closing the load plate. If it doesn't close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the CPU is aligned properly.

Installing an Active CPU Heatsink with Fan

1. Locate the CPU Fan power connector on the motherboard. (Refer to the layout on the right for the CPU Fan location.)

2. Position the heatsink so that the heatsink fan wires are closest to the CPU fan power connector and are not interfered with other components.

3. Inspect the CPU Fan wires to make sure that the wires are routed through the bottom of the heatsink.

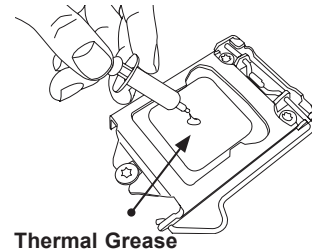
4. Remove the thin layer of the protective film from the heatsink.

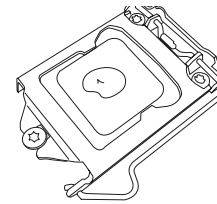
   Warning: CPU overheat may occur if the protective film is not removed from the heatsink.

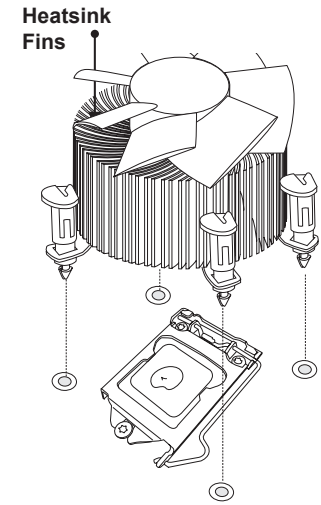
5. Apply the proper amount of thermal grease on the CPU.

   Note: if your heatsink came with a thermal pad, please ignore this step.

6. If necessary, rearrange the wires to make sure that the wires are not pinched between the heatsink and the CPU. Also make sure to keep clearance between the fan wires and the fins of the heatsink.





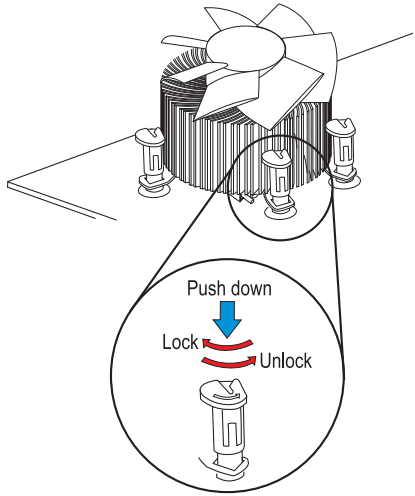


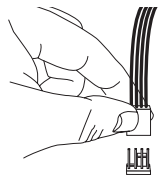
Recommended Supermicro heatsink:
SNK-P0046A4 active heatsink

7. Align the four heatsink fasteners with the mounting holes on the motherboard. Gently push the pairs of diagonal fasteners (#1 & #2, and #3 & #4) into the mounting holes until you hear a click. Also, make sure to orient each fastener so that the narrow end of the groove is pointing outward.

8. Repeat Step 7 to insert all four heatsink fasteners into the mounting holes.

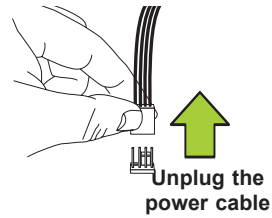
9. Once all four fasteners are securely inserted into the mounting holes, and the heatsink is properly installed on the motherboard, connect the heatsink fan wires to the CPU Fan connector.





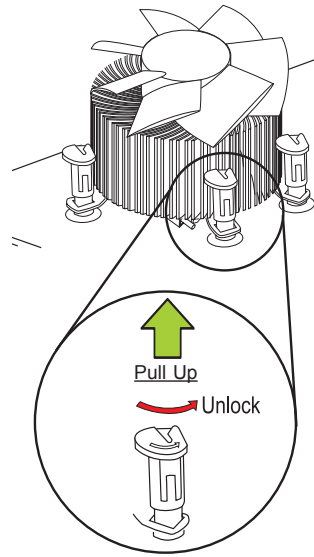
Removing the Heatsink

Warning: We do not recommend that the CPU or the heatsink be removed. However, if you do need to remove the heatsink, please follow the instructions below to remove the heatsink and to prevent damage done to the CPU or other components.



Active Heatsink Removal

1. Unplug the power cable from the power supply.
2. Disconnect the heatsink fan wires from the CPU fan header.
3. Use your finger tips to gently press on the fastener cap and turn it counterclockwise to make a 1/4 (90^0) turn, and pull the fastener upward to loosen it.
4. Repeat Step 3 to loosen all fasteners from the mounting holes.
5. With all fasteners loosened, remove the heatsink from the CPU.



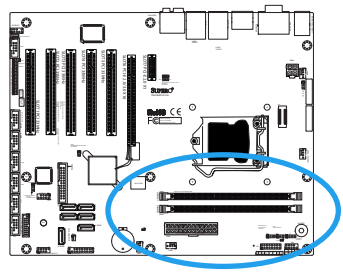
2-3 Installing DDR3 Memory

Note: Check the Supermicro website for recommended memory modules.

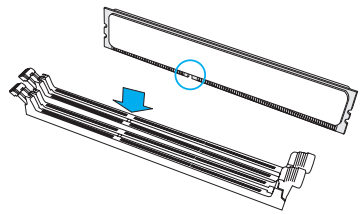
CAUTION

Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

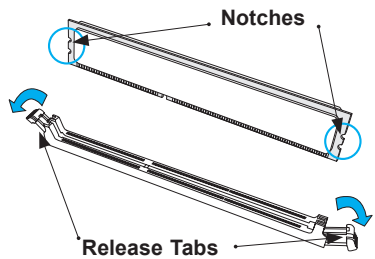
DIMM Installation



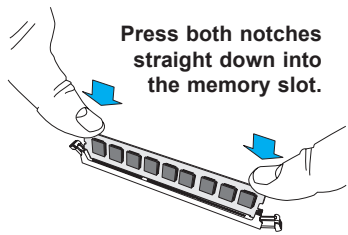
1. Insert the desired number of DIMMs into the memory slots, starting with DIMM1A (Slot A, Channel 1, see the next page for the location). For best performance, please use the memory modules of the same type and speed in the same bank.
2. Push the release tabs outwards on both ends of the DIMM slot to unlock it.
3. Align the key of the DIMM module with the receptive point on the memory slot.



4. Align the notches on both ends of the module against the receptive points on the ends of the slot.
5. Use two thumbs together to press the notches on both ends of the module straight down into the slot until the module snaps into place.



6. Press the release tabs to the lock positions to secure the DIMM module into the slot.

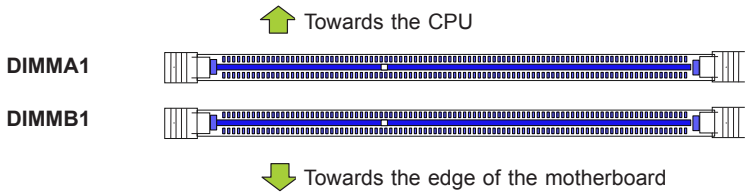


Removing Memory Modules

Reverse the steps above to remove the DIMM modules from the motherboard.

Memory Support

The C7H61 motherboard series supports up to 16GB of Unbuffered (UDIMM) non-ECC DDR3 1600/1333/1066 MHz in 2 memory slots.



Memory Population Guidelines

When installing memory modules, the DIMM slots should be populated in the following order: DIMMA1 and DIMMB1.

- Always use DDR3 DIMM modules of the same size, type and speed.
- Mixed DIMM speeds can be installed. However, all DIMMs will run at the speed of the slowest DIMM.
- The motherboard will support one DIMM module. However for best memory performance, install DIMM modules in pairs.

Recommended Population (Balanced)		
DIMMA1 Slot	DIMMB1 Slot	Total System Memory
2GB		2GB
2GB	2GB	4GB
4GB		4GB
4GB	4GB	8GB
8GB		8GB
8GB	8GB	16GB

Note: Due to memory allocation to system devices, the amount of memory that remains available for operational use will be reduced when 4 GB of RAM is used.

2-4 Motherboard Installation

All motherboards have standard mounting holes to fit different types of chassis. Make sure that the locations of all the mounting holes for both motherboard and chassis match. Although a chassis may have both plastic and metal mounting fasteners, metal ones are highly recommended because they ground the motherboard to the chassis. Make sure that the metal standoffs click in or are screwed in tightly. Then use a screwdriver to secure the motherboard onto the motherboard tray.

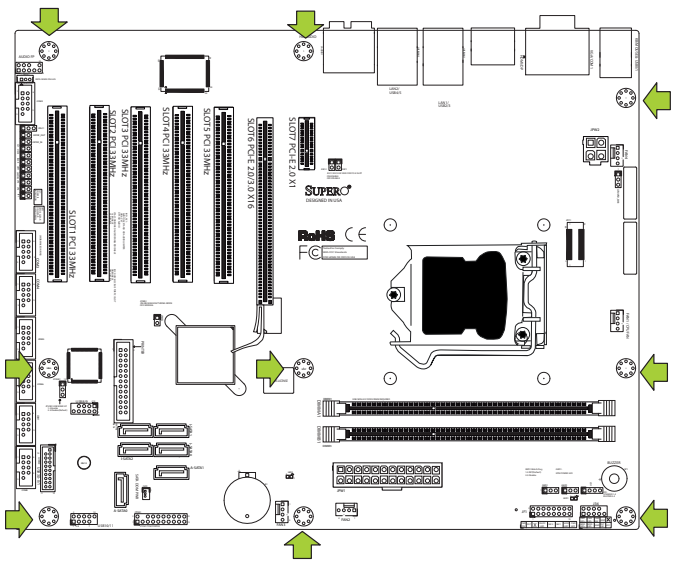
Tools Needed

Philips Screwdriver

Philips Screws

Standoffs
Only if Needed

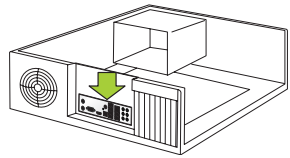
Location of Mounting Holes



Caution: 1) To avoid damaging the motherboard and its components, please do not use a force greater than 8 lb/inch on each mounting screw during motherboard installation. 2) Some components are very close to the mounting holes. Please take precautionary measures to avoid damaging these components when installing the motherboard to the chassis.

Installing the Motherboard

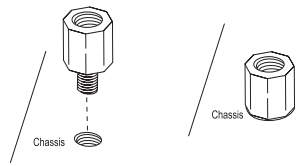
1. Install the I/O shield into the back of the chassis.



2. Locate the mounting holes on the motherboard. (See the previous page.)

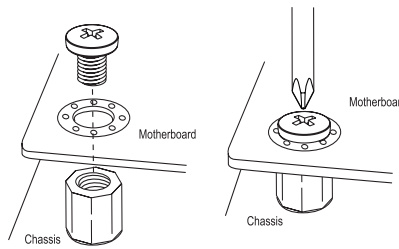
3. Locate the matching mounting holes on the chassis. Align the mounting holes on the motherboard against the mounting holes on the chassis.

4. Install standoffs in the chassis as needed.



5. Install the motherboard into the chassis carefully to avoid damaging other motherboard components.

6. Using the Philips screwdriver, insert a Philips head #6 screw into a mounting hole on the motherboard and its matching mounting hole on the chassis.



7. Repeat Step 5 to insert #6 screws into all mounting holes.

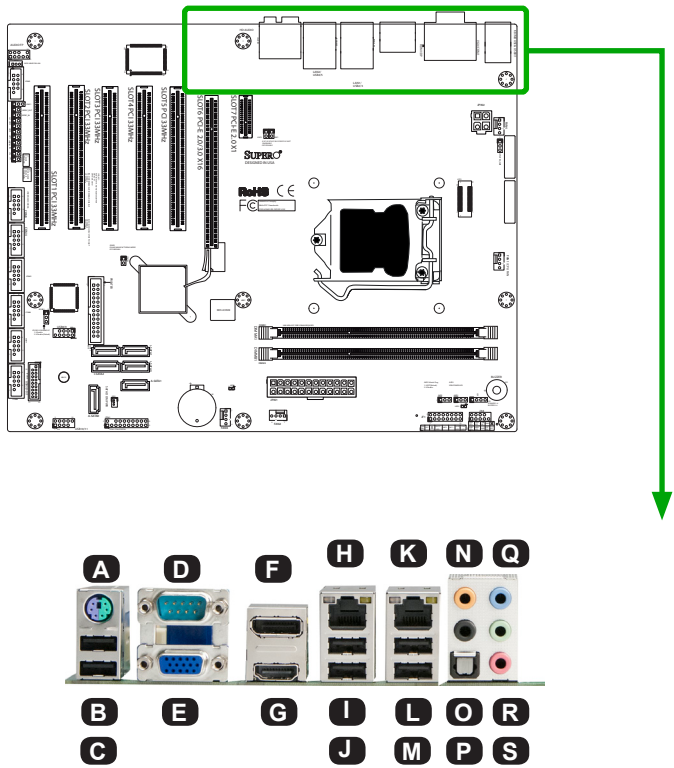
8. Make sure that the motherboard is securely placed in the chassis.

Note: Images displayed are is for illustration only. Your chassis or components might look different from those shown in this manual.

2-5 Connectors/IO Ports

The I/O ports are color coded in conformance with the PC 99 specification. See the figure below for the colors and locations of the various I/O ports.

Backplane I/O Panel



A. KB/Mouse Port	H. LAN1 Port	N. Center/LFE Out	Audio
B. USB 0 (2.0)	I. USB 2 (2.0)	O. Surround Out	
C. USB 1 (2.0)	J. USB 3 (2.0)	P. S/PDIF Out (Optical)	
D. COM 1 (C7H61 Only)	K. LAN2 Port	Q. Line In	
E. VGA Port	L. USB 4 (2.0)	R. Line Out	
F. VESA DisplayPort	M. USB 5 (2.0)	S. Microphone In	
G. HDMI Port			

ATX PS/2 Keyboard/Mouse Ports

The ATX PS/2 keyboard and PS/2 mouse are located next to the Back Panel USB Ports 8/9 on the motherboard. See the table at right for pin definitions.

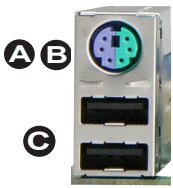
PS/2 Keyboard/Mouse Pin Definitions

PS2 Keyboard		PS2 Mouse	
Pin#	Definition	Pin#	Definition
1	KB Data	1	Mouse Data
2	No Connection	2	No Connection
3	Ground	3	Ground
4	Mouse/KB VCC (+5V)	4	Mouse/KB VCC (+5V)
5	KB Clock	5	Mouse Clock
6	No Connection	6	No Connection
VCC: with 1.5A PTC (current limit)			

Note:

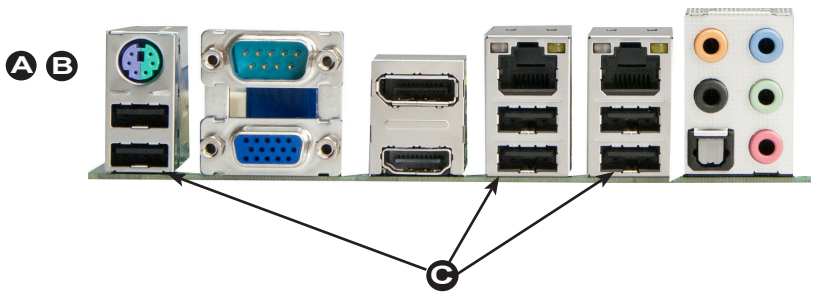
This motherboard offers three Keyboard/Mouse connection options as shown in the graphic below.

- **A.** Plug in a PS/2 keyboard or PS/2 Mouse cable to the PS2 Keyboard/ Mouse port.
- **B.** Plug in a Y cable that that includes a keyboard cable and mouse cable to the PS/2 Keyboard/Mouse port..
- **C.** Connect a USB keyboard cable or a USB mouse cable to any USB port.



Keyboard/Mouse
(For a PS/2 keyboard cable, a PS/2 Mouse cable or a PS/2 Y cable) (optional)

(For a USB keyboard cable or a USB mouse cable, in any USB port) (optional)



Universal Serial Bus (USB)

Six Universal Serial Bus 2.0 ports (0~5) are located on the I/O back panel. USB 2.0 headers 8/9,10/11 and USB 3.0 header 0/1* are used to provide front chassis access using USB cables (not included). See the tables below for pin definitions.

Front Panel USB (2.0) #8/9, 10/11 Pin Definitions

Pin #	Definition	Pin #	Definition
1	+5V	2	+5V
3	USB_PN2	4	USB_PN3
5	USB_PP2	6	USB_PP3
7	Ground	8	Ground
9	Key	10	Ground

Back Panel USB (2.0) 0,1,2,3,4,5 Pin Definitions

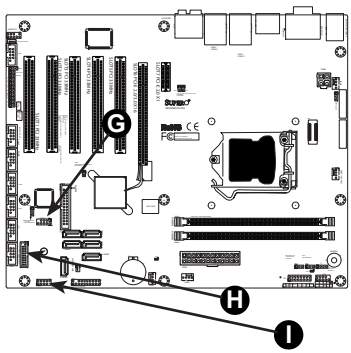
Pin#	Definition	Pin#	Definition
1	+5V	5	+5V
2	USB_PN1	6	USB_PN0
3	USB_PP1	7	USB_PP0
4	Ground	8	Ground

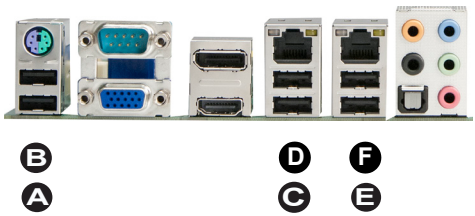
Front Panel USB (3.0) #0/1 Pin Definitions

Pin#	Pin#	Signal Name	Description
1	10	VBUS	Power
2	11	D-	USB 2.0 Differential Pair
3	12	D+	
4	13	Ground	Ground of PWR Return
5	14	StdA_SSRX-	SuperSpeed Receiver
6	15	StdA_SSRX+	Differential Pair
7	16	GND_DRAIN	Ground for Signal Return
8	17	StdA_SSTX-	SuperSpeed Transmitter
9	18	StdA_SSTX+	Differential Pair

A. Backpanel USB 2.0 #1
B. Backpanel USB 2.0 #0
C. Backpanel USB 2.0 #3
D. Backpanel USB 2.0 #2
E. Backpanel USB 2.0 #5
F. Backpanel USB 2.0 #4
G. Front Panel USB 2.0 #8/9
H. Front Panel USB 3.0 #0/1*
I. Front Panel USB 2.0 #10/11

***Note:** USB 3.0 #0/1 is not supported on the C7H61-L.





Ethernet Ports

Two Gigabit Ethernet ports (LAN1/ LAN2) are located next to the HD Audio Connector on the I/O Backpanel to provide network connections. These ports accept RJ45 type cables.

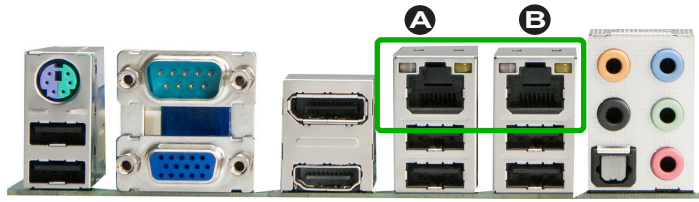
Note

Please refer to the LED Indicator Section for LAN LED information.

LAN Ports Pin Definition			
Pin#	Definition		
1	P2V5SB	10	SGND
2	TD0+	11	Act LED
3	TD0-	12	P3V3SB
4	TD1+	13	Link 100 LED (Green, +3V3SB)
5	TD1-	14	Link 1000 LED (Yellow, +3V3SB)
6	TD2+	15	Ground
7	TD2-	16	Ground
8	TD3+	17	Ground
9	TD3-	88	Ground

(NC: No Connection)

A. LAN1
B. LAN2

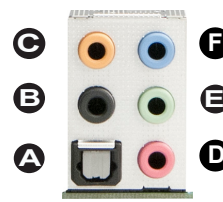


Back Panel High Definition Audio (HD Audio)

This motherboard features a 7.1+2 Channel High Definition Audio (HDA) codec that provides 10 DAC channels. The HD Audio connections simultaneously supports multiple-streaming 7.1 sound playback with 2 channels of independent stereo output through the front panel stereo out for front, rear, center and subwoofer speakers. Use the Advanced software included in the CD-ROM with your motherboard to enable this function.

(BP) HD Audio	
Conn#	Signal
A	SPDIF_Out
B	Surround_Out
C	CEN/LFE_Out
D	Mic_In
E	Line_Out
F	Line_In

HD Audio



A.SPDIF_Out
B. Surround_Out
C. CEN/LFE_Out
D. Mic_In
E. Line-Out
F. Line_In

HDMI Port

A single High-Definition Multimedia Interface port is located next to the VGA port on the I/O backpanel. This connector is used to display both high definition video and digital sound through an HDMI-capable display, using a single HDMI cable (not included). C7H61 supports HDMI specification version 1.4a.

VGA Port

A VGA port is located next to the USB ports on the I/O backpanel. Use this port to connect to a compatible VGA display.

VESA DisplayPort

DisplayPort was developed by VESA (Video Electronics Standards Association) and the DisplayPort Task Group. DisplayPort Connects to virtually any device, and an Active DisplayPort adaptor allows legacy devices with VGA, DVI and HDMI ports to be connected easily. C7H61 supports DisplayPort standard version 1.1a.

Serial Port (COM1)

Serial port COM1 is located on the I/O back panel. There are seven other serial port headers on the motherboard for COM2~COM8. Refer to page 2-24 for more information. See the table on the right for pin definitions.

Serial Ports-COM2/COM3/COM4 Pin Definitions

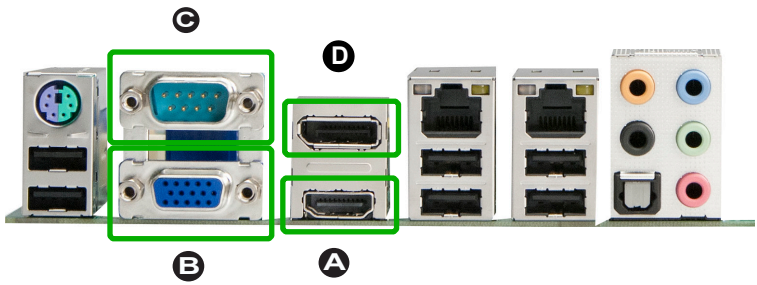
Pin #	Definition	Pin #	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	N/A

A. HDMI Port

B. VGA Port

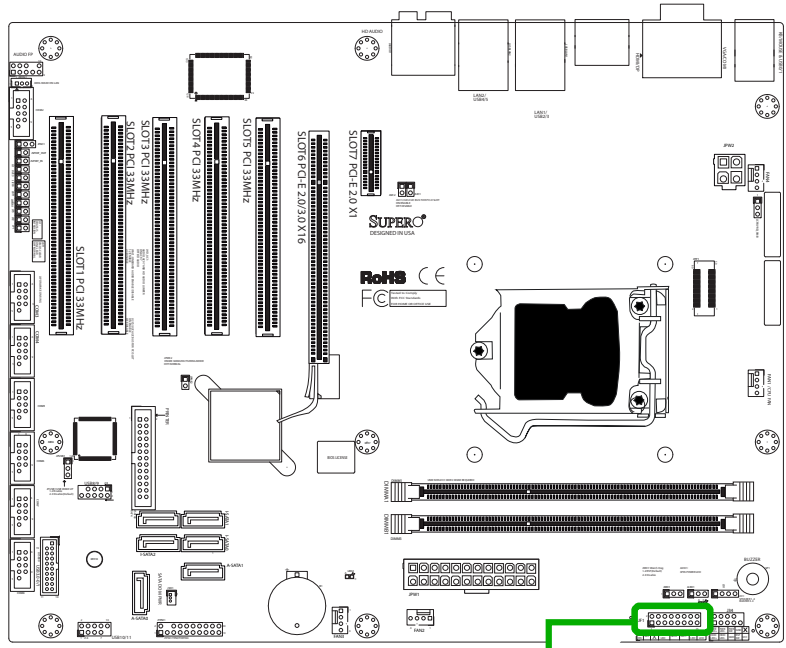
C. COM1 Port (C7H61 only)

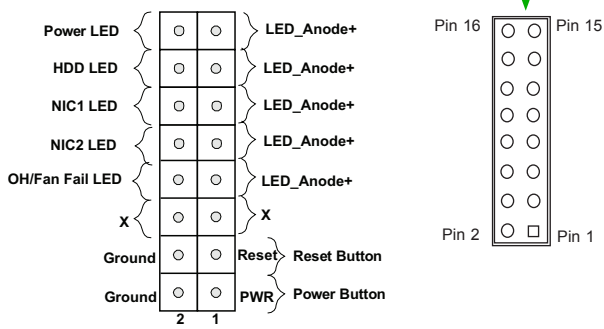
D. VESA DisplayPort



Front Control Panel

JF1 contains header pins for various buttons and indicators that are normally located on a control panel at the front of the chassis. These connectors are designed specifically for use with Supermicro chassis. See the figure below for the descriptions of the front control panel buttons and LED indicators. Refer to the following section for descriptions and pin definitions.





JF1 Header Pins

Front Control Panel Pin Definitions

Power LED

The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

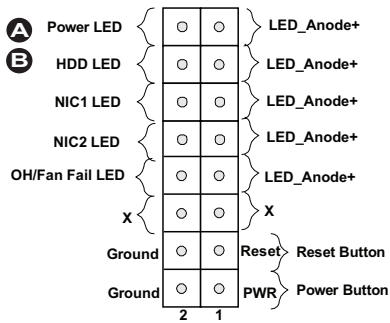
Power LED Pin Definitions (JF1)	
Pin#	Definition
15	+5V
16	Ground

HDD LED

The HDD LED connection is located on pins 13 and 14 of JF1. Attach a cable here to indicate the status of HDD-related activities, including IDE, SATA activities. See the table on the right for pin definitions.

HDD LED Pin Definitions (JF1)	
Pin#	Definition
13	+5V
14	HD Active

A. PWR LED
B. HDD LED



NIC1/NIC2 (LAN1/LAN2)

The NIC (Network Interface Controller) LED connection for LAN port 1 is located on pins 11 and 12 of JF1, and the LED connection for LAN Port 2 is on Pins 9 and 10. NIC1 LED and NIC2 LED are 2-pin NIC LED headers. Attach NIC LED cables to NIC1 and NIC2 LED indicators to display network activities. Refer to the table on the right for pin definitions.

LAN1/LAN2 LED Pin Definitions (JF1)

Pin#	Definition
9/11	Vcc
10/12	Ground

Overheat (OH)/Fan Fail

Connect an LED cable to OH/Fan Fail connections on pins 7 and 8 of JF1 to provide warnings for chassis overheat/fan failure. Refer to the table on the right for pin definitions.

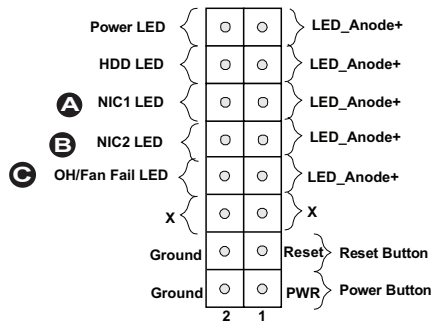
OH/Fan Fail LED Pin Definitions (JF1)

Pin#	Definition
7	Vcc/Blue UID LED
8	OH/Fan Fail LED

OH/Fan Fail Indicator Status

State	Definition
Off	Normal
On	Overheat
Flash-ing	Fan Fail

A. NIC1 LED
B. NIC2 LED
C. OH/Fan Fail



Reset Button

The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to a hardware reset switch on the computer case to reset the system. Refer to the table on the right for pin definitions.

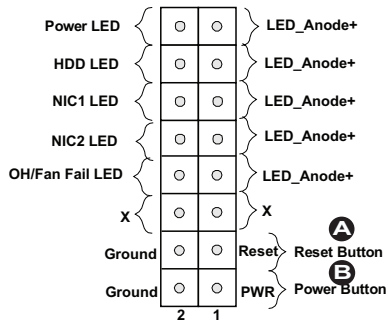
Reset Button Pin Definitions (JF1)	
Pin#	Definition
3	Reset
4	Ground

Power Button

The Power Button connection is located on pins1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (with a setting in the BIOS - see Chapter 4). To turn off the power in the suspend mode, press the button for at least 4 seconds. Refer to the table on the right for pin definitions.

Power Button Pin Definitions (JF1)	
Pin#	Definition
1	Signal
2	+3V Standby

A. Reset Button
B. PWR Button



2-6 Connecting Cables

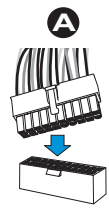
This section provides brief descriptions and pin-out definitions for onboard headers and connectors. Be sure to use the correct cable for each header or connector. For information on Backpanel USB and Front Panel USB ports, refer to Page 2-17. For Front Panel Audio, please refer to Page 2-19.

ATX Main PWR & CPU PWR Connectors (JPW1 & JPW2)

The 24-pin main power connector (JPW1) is used to provide power to the motherboard. The 4-pin Aux PWR connector (JPW2) may also be required for the processor. These power connectors meet the SSI EPS 12V specification. See the table on the right for pin definitions.

ATX Power 24-pin Connector Pin Definitions (JPW1)

Pin#	Definition	Pin #	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V



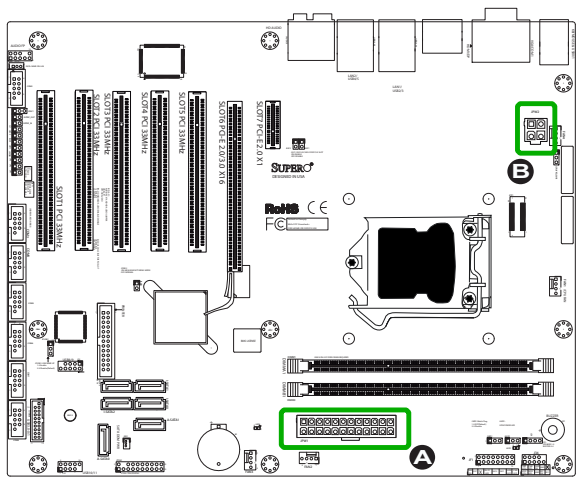
24-Pin Main PWR

4-Pin Processor PWR

12V 4-pin Power Connector Pin Definitions

Pins	Definition
1 through 2	Ground
3 through 4	+12VDC

(Required)



A. 24-Pin ATX Main PWR

B. 4-Pin Processor PWR

Fan Headers (Fan 1 ~ Fan 4)

The C7H61 has four fan headers (Fan 1~Fan 4). These fans are 4-pin fan headers. Although pins 1-3 of the fan headers are backward compatible with the traditional 3-pin fans, we recommend the use 4-pin fans to take advantage of the fan speed control in the BIOS Hardware Monitoring section. This allows the BIOS to automatically adjust fan speeds based on the motherboard's detected system temperature. Refer to the table on the right for pin definitions.

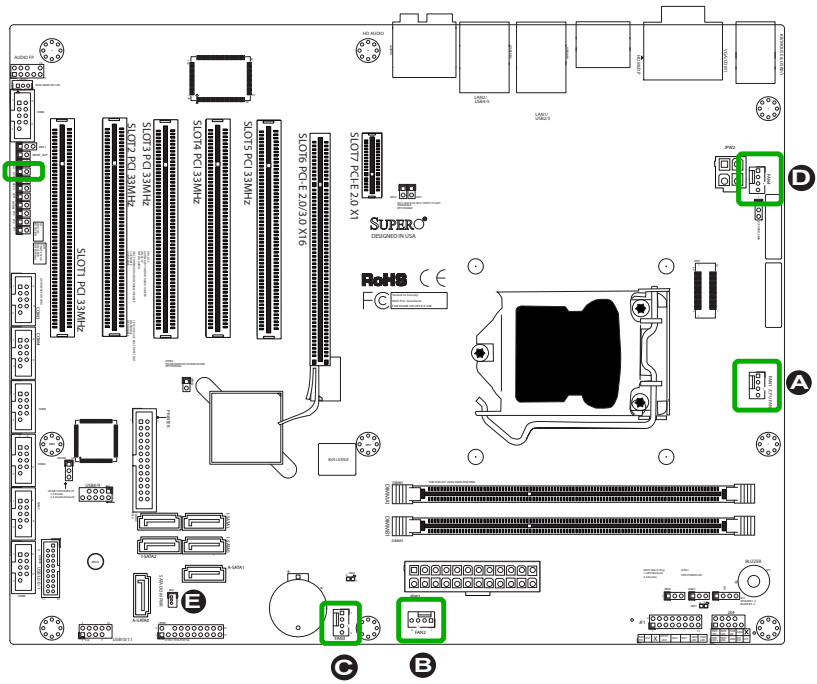
Fan Header Pin Definitions	
Pin#	Definition
1	Ground (Black)
2	2.5A/+12V (Red)
3	Tachometer
4	PWM_Control

Chassis Intrusion (JL1)

A Chassis Intrusion header is located at JL1 on the motherboard. Attach the appropriate cable from the chassis to inform you of a chassis intrusion when the chassis is opened.

Chassis Intrusion Pin Definitions (JL1)	
Pin#	Definition
1	Intrusion Input
2	Ground

A. Fan 1 (CPU Fan)
B. Fan 2
C. Fan 3
D. Fan 4
E. Chassis Intrusion



Internal Buzzer (SP1)

The Internal Buzzer (SP1) can be used to provide audible indications for various beep codes. See the table on the right for pin definitions.

Internal Buzzer Pin Definition		
Pin#		Definitions
Pin 1	Pos. (+)	Beep In
Pin 2	Neg. (-)	Alarm Speaker

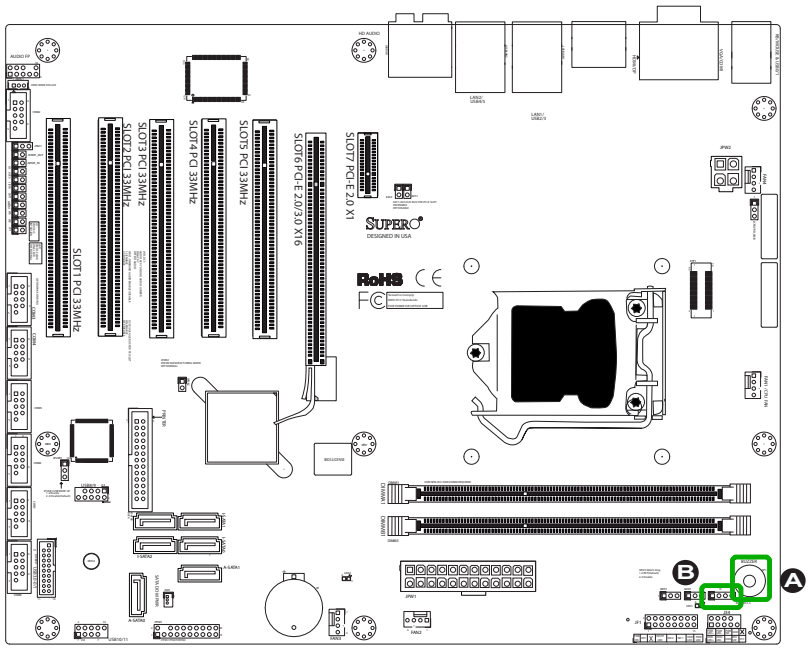
Speaker (JD1)

On the JD1 header, Pins 3~4 are used for internal speaker. Close Pins 3~4 with a cap/jumper to use the on-board speaker. If you wish to use an external speaker, close Pins 1~4 with a cable. See the table on the right for pin definitions.

Speaker Connector Pin Definitions	
Pin Setting	Definition
Pins 3~4	Internal Speaker
Pins1~4	External Speaker

A. Internal Buzzer

B. Speaker Header



Onboard Power LED (JLED1)

An onboard Power LED header is located at JLED1. This Power LED header is connected to Front Control Panel located at JF1 to indicate the status of system power. See the table on the right for pin definitions.

Onboard PWR LED Pin Definitions	
Pin#	Definition
1	VCC
2	No Connection
3	Connection to PWR LED in JF1

Serial Ports (COM1 ~ COM8)

In addition to COM1, which is located on the I/O back panel, there are seven (7) serial port headers on the motherboard for COM2~COM8. See the table on the right for pin definitions. **Note:** COM1 (I/O back panel) and COM3~COM8 are not supported on the C7H61-L.

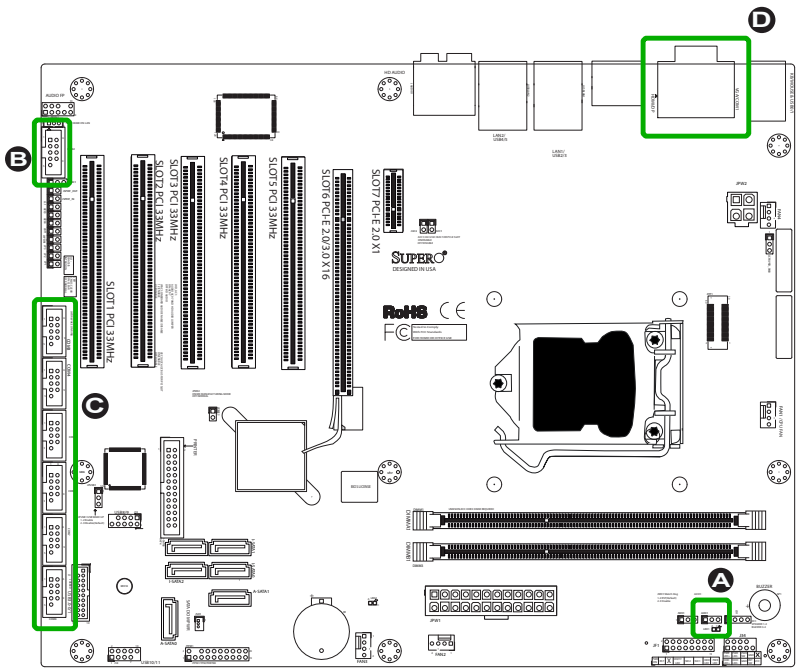
Serial Ports-COM2/COM3/COM4 Pin Definitions			
Pin #	Definition	Pin #	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	N/A

A. PWR LED

B. COM2

C. COM3~COM8

D. COM1



DOM PWR Connector (JSD1)

The Disk-On-Module (DOM) power connector, located at JSD1, provides 5V (Gen1/Gen) power to a solid state DOM storage device connected to one of the SATA ports. See the table on the right for pin definitions.

DOM PWR Pin Definitions	
Pin#	Definition
1	5V
2	Ground
3	Ground

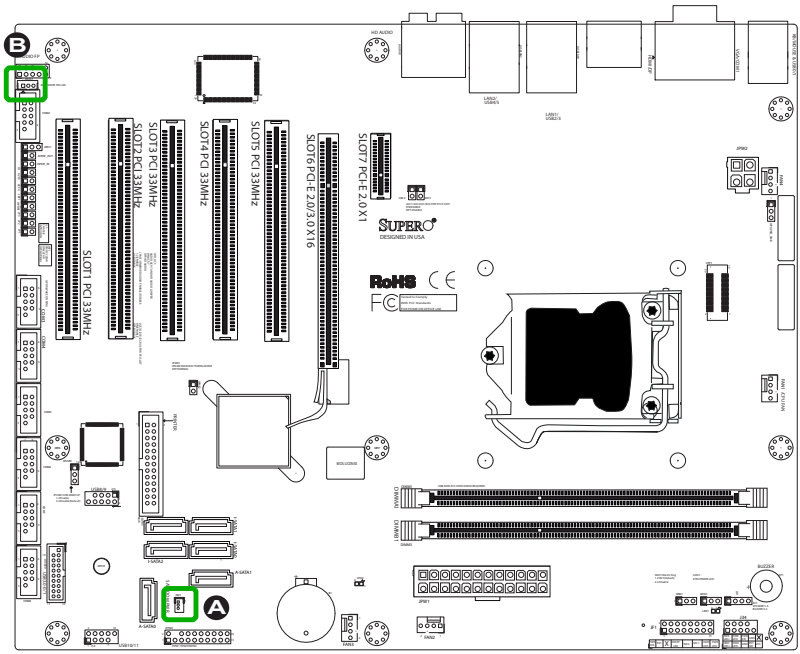
Legacy Wake-On-LAN (JWOL)

The Wake-On-LAN header is located at JWOL on the motherboard. See the table on the right for pin definitions. (You must also have a LAN card with a Wake-On-LAN connector and cable to use this feature.)

Wake-On-LAN Pin Definitions (JWOL)	
Pin#	Definition
1	+5V Standby
2	Ground
3	Wake-up

A.DOM PWR

B. JWOL



Wake-On-Ring (JWOR)

The Wake-On-Ring header is located at JWOR. This function allows your computer to wake up when receiving an incoming call to the modem while in the suspend state. This header is provided to support legacy devices. See the table on the right for pin definitions.

Wake-On-Ring Pin Definitions	
Pin#	Definition
1	Ground
2	Wake-up

SPDIF IN / SPDIF OUT (JSPDIF_IN/ JSPDIF_OUT)

The SP/DIF In (JSPDIF_IN) and SP/DIF Out (JSPDIF_OUT) are used for digital audio. You will also need the appropriate cables to use these features.

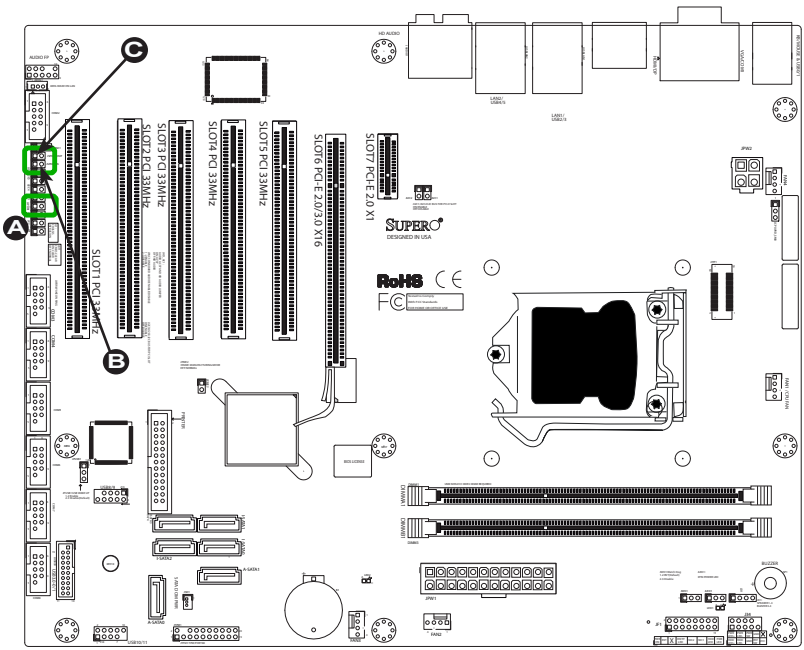
SPDIF_In Pin Definitions	
Pin#	Definition
1	S/PDIF_In
2	Ground

SPDIF_Out Pin Definitions	
Pin#	Definition
1	S/PDIF_Out
2	Ground

A.JWOR

B. SPDIF_IN

C. SPDIF_OUT



TPM Header (JTPM1)

This header is used to connect a Trusted Platform Module (TPM), which is available from a third-party vendor. A TPM is a security device that supports encryption and authentication in hard drives. It enables the motherboard to deny access if the TPM associated with the hard drive is not installed in the system. See the table on the right for pin definitions.

Trusted Platform Module Header Pin Definitions

Pin #	Definition	Pin #	Definition
1	LCLK	2	GND
3	LFRAME	4	No Pin
5	LRESET	6	VCC5
7	LAD3	8	LAD2
9	VCC3	10	LAD1
11	LAD0	12	GND
13	RSV0	14	RSV1
15	SB3V	16	SERIRQ
17	GND	18	CLKRUN
19	LPCPD	20	RSV2

Front Accessible Audio Header

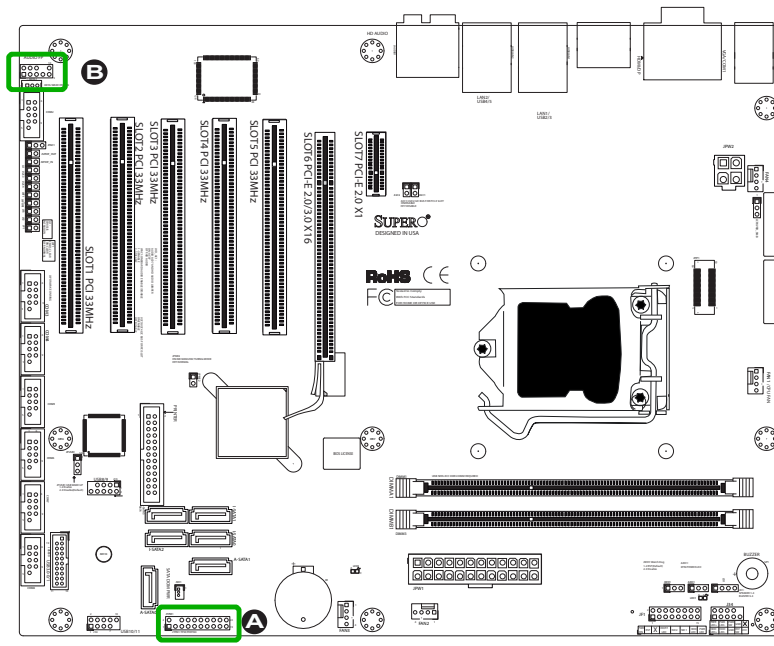
A 10-pin Audio header is also located on the motherboard. This header allows you to use the onboard sound for audio playback. Connect an audio cable to the audio header to use this feature. See the tables at right for pin definitions for these headers.

10-in Audio Pin Definitions

Pin#	Signal	Pin#	
1	Microphone_Left	6	Ground
2	Audio_Ground	7	Jack_Detect
3	Microphone_Right	8	Key
4	Audio_Detect	9	Line_2_Left
5	Line_2_Right	10	Ground

A. TPM Header

B. Audio Header



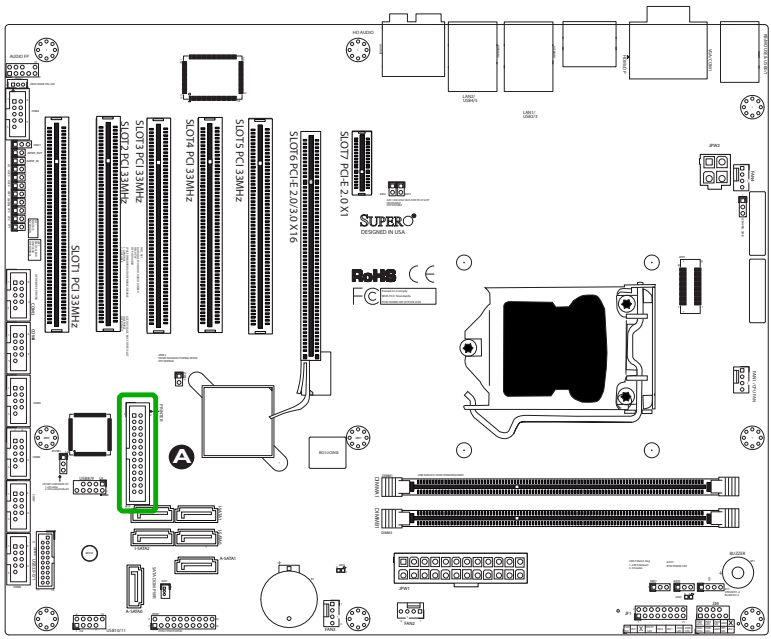
LPT1 Header (PRINTER)

The PRINTER header is used to attach a parallel printer to the LPT1 printer port of the motherboard. Attach a compatible cable to this header (not supplied with motherboard).

Note: this feature is supported on the C7H61 only.

A. LPT1 Header (PRINTER)

LPT1 Header (PRINTER) Pin Definitions			
Pin #	Definition	Pin #	Definition
1	Strobe-	2	Auto Feed-
3	Data Bit 0	4	Error-
5	Data Bit 1	6	Init-
7	Data Bit 2	8	SLCT IN-
9	Data Bit 3	10	GND
11	Data Bit 4	12	GND
13	Data Bit 5	14	GND
15	Data Bit 6	16	GND
17	Data Bit 7	18	GND
19	ACK	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	NC

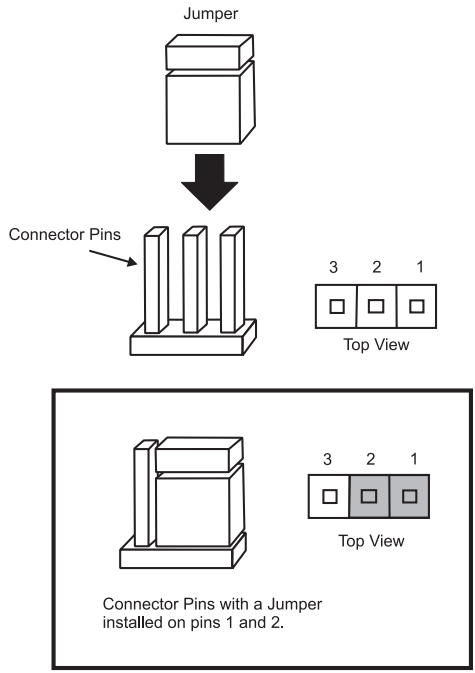


2-7 Jumper Settings

Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board.

Note: On two pin jumpers, "Closed" means the jumper is on, and "Open" means the jumper is off the pins.



CMOS Clear (JBT1)

JBT1 is used to clear the saved system setup stored in the CMOS chip. To clear the contents of the CMOS, completely shut down the system, remove the AC power cable and then short JBT1 with a jumper. Remove the jumper before powering on the system again. This will erase all user settings and revert everything to their factory-set defaults.

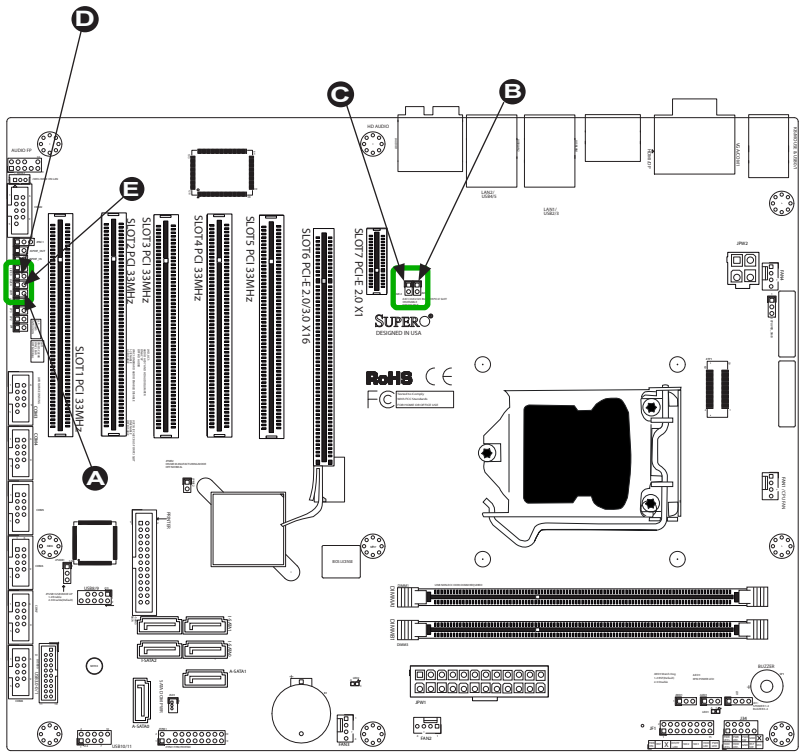
PCI Slot SMB Enable (JI2C1/C2/C3/C4)

Use Jumpers JI2C1/JI2C2 to enable PCI SMB (System Management Bus) support to improve system management for the PCIE slots. JI2C3/JI2C4 are used for the PCI slots. See the table on the right for jumper settings.

Note: For JI2C3/JI2C4 on the C7H61-L only, default is Short (Enabled).

PCI Slot_SMB Enable Jumper Settings	
Jumper Setting	Definition
Short	Enabled
Open	Disabled (Default)*

A. Clear CMOS
B. JI2C1
C. JI2C2
D. JI2C3*
E. JI2C4*



Intel ME Manufacturing Mode (JPME2)

Close the pins of JPME2 to enable Intel ME Manufacturing Mode. See the table on the right for jumper settings.

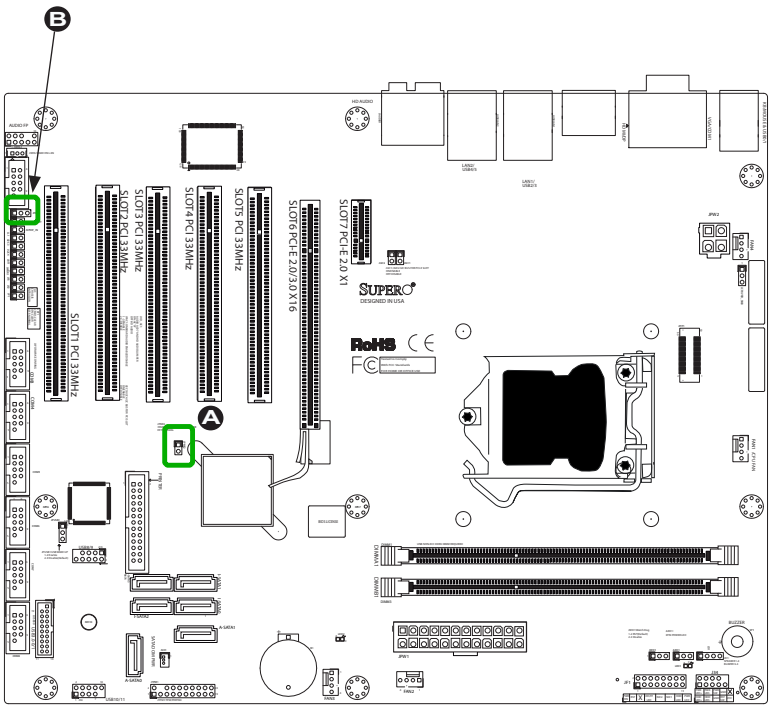
Intel ME Manufacturing Mode Jumper Settings	
Jumper Setting	Definition
Short	Enabled
Open	Disabled (Default)

Audio Enable/Disable (JPAC1)

Jumper JPAC1 allows the user to enable or disable on-board audio support. See the table on the right for jumper settings.

Audio Enable/Disable Jumper Settings	
Pin#	Definition
1-2	Enabled (Default)
2-3	Disabled

A. Intel ME Manufacturing Mode
B. Audio Enable/Disable



USB Wake-Up (JUSB1)

Use JPUSB1 jumper to enable the USB wake up feature. These jumpers allow you to "wake-up" the system by pressing a key on the USB keyboard or by clicking the USB mouse of your system. The JPUSB jumpers are used together with the USB Wake-Up function in the BIOS.

USB Wake-Up Jumper Settings	
Pin#	Definition
1-2	Enabled
2-3	Disabled (Default)

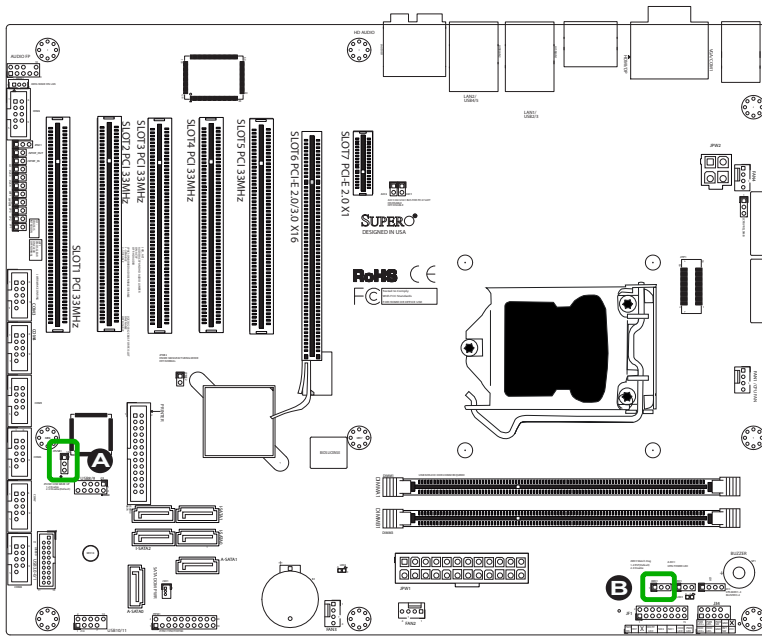
Watch Dog Timer Reset (JWD1)

Watch Dog Timer (JWD1) is a system monitor that can reboot the system when a software application hangs. Close Pins 1-2 to reset the system if an application hangs. See the table on the right for jumper settings. Watch Dog must also be enabled in the BIOS.

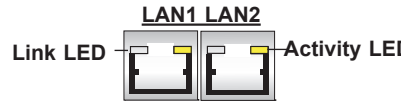
Watch Dog Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Reset (default)
Pins 2-3	Disabled

A. USB Wake-Up

B. Watch Dog Timer



2-8 Onboard Indicators



LAN 1/LAN 2 LEDs

Two LAN ports (LAN 1/LAN 2) are located on the I/O backplane of the motherboard. Each Ethernet LAN port has two LEDs. The yellow LED indicates activity, while the Link LED may be green, amber, or off to indicate the speed of the connections. See the tables at right for more information.

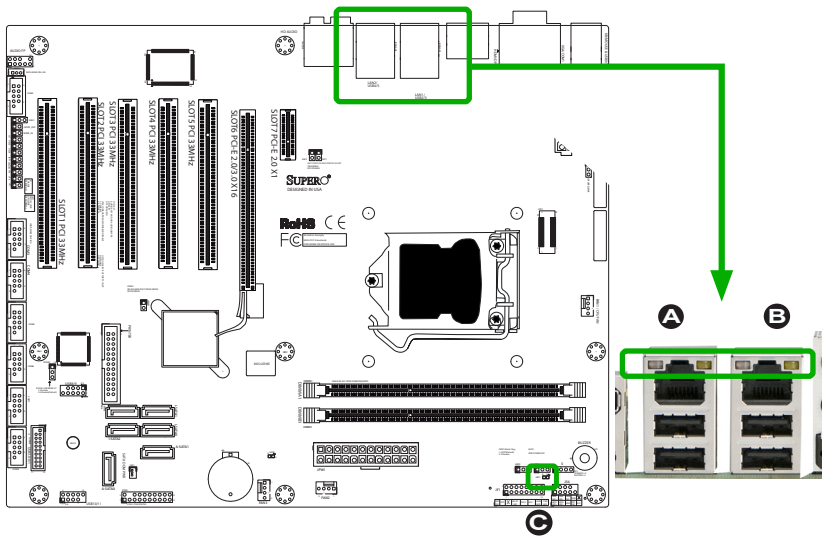
LAN 1/LAN 2 Link LEDs (Green/Amber/Off)	
LED Color	Definition
Off	No Connection or 10 Mbps
Green	100 Mbps
Amber	1 Gbps

Onboard Power LED (LED1)

An Onboard Power LED is located at LED1 on the motherboard. When LED1 is on, the AC power cable is connected. Make sure to disconnect the power cable before removing or installing any component. See the layout below for the LED location.

Onboard PWR LED Indicator LED Status	
Status	Definition
Off	System Off
On	System on, or System off and PWR Cable Connected

A. LAN Port 1
B. LAN Port 2
C. PWR LED



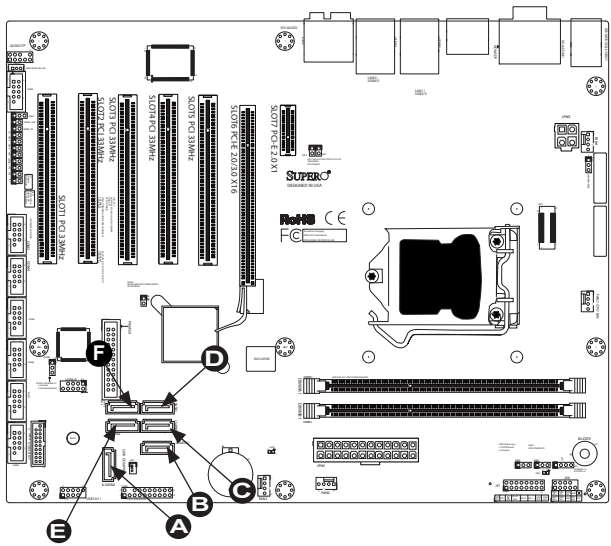
2-9 SATA Connections

SATA Connections (I-SATA0~I-SATA5)

Two Serial ATA (SATA) 3.0 connectors (A-SATA 0/1) are located on the motherboard. In addition, four SATA 2.0 (I-SATA 0~3) connectors are also located on the board. The SATA 2.0 ports are supported by the Intel H61 chip; while the SATA 3.0 ports are supported by the ASMedia SATA Controller. These Serial Link connections provide faster data transmission than legacy Parallel ATA. See the table on the right for pin definitions.

C7H61 SATA Connector Types	
Port#	Connection Type
I-SATA 0/1/2/3	SATA 2.0
A-SATA 0/1	SATA 3.0

SATA 2.0/3.0 Connectors Pin Definitions	
Pin#	Signal
1	Ground
2	SATA_TXP
3	SATA_TXN
4	Ground
5	SATA_RXN
6	SATA_RXP
7	Ground



A. A-SATA 3.0 #0
B. A-SATA 3.0 #1
C. I-SATA 2.0 #0
D. I-SATA 2.0 #1
E. I-SATA 2.0 #2
F. I-SATA 2.0 #3

Chapter 3

Troubleshooting

3-1 Troubleshooting Procedures

Use the following procedures to troubleshoot your system. If you have followed all of the procedures below and still need assistance, refer to the 'Technical Support Procedures' and/or 'Returning Merchandise for Service' section(s) in this chapter. Always disconnect the AC power cable before adding, changing or installing any hardware components.

Before Power On

1. Make sure that the Standby PWR LED is not on. (**Note:** If it is on, the onboard power is on. Be sure to unplug the power cable before installing or removing the components.)

2. Make sure that there are no short circuits between the motherboard and chassis.

3. Disconnect all ribbon/wire cables from the motherboard, including those for the keyboard and mouse. Also, be sure to remove all add-on cards.

4. Install a CPU and heatsink (-be sure that it is fully seated) and then connect the chassis speaker and the power LED to the motherboard. Check all jumper settings as well.

No Power

1. Make sure that there are no short circuits between the motherboard and chassis.

2. Make sure that all jumpers are set to their default positions.

3. Check if the 115V/230V switch on the power supply is properly set.

4. Turn the power switch on and off to test the system.

5. The battery on your motherboard may be old. Check to make sure that it still supplies ~3VDC. If it does not, replace it with a new one.

No Video

1. If the power is on, but you have no video--in this case, you will need to remove all the add-on cards and cables first.

2. Use the speaker to determine if any beep codes exist. (Refer to Appendix A for details on beep codes.)

3. Remove all memory modules and turn on the system. (If the alarm is on, check the specs of memory modules, reset the memory or try a different one.)

Memory Errors

1. Make sure that the DIMM modules are properly installed and fully seated in the slots.

2. You should be using unbuffered Non-ECC DDR3 (1.5V) 1600/1333/1066 MHz memory (recommended by the manufacturer). Also, it is recommended that you use the memory modules of the same type and speed for all DIMMs in the system. Do not use memory modules of different sizes, different speeds and different types on the same motherboard.

3. Check for bad DIMM modules or slots by swapping modules between slots to see if you can locate the faulty ones.

4. Check the switch of 115V/230V power supply.

Losing the System's Setup Configuration

1. Please be sure to use a high quality power supply. A poor quality power supply may cause the system to lose CMOS setup information. Refer to Section 1-5 for details on recommended power supplies.

2. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.

3. If the above steps do not fix the Setup Configuration problem, contact your vendor for repairs.

3-2 Technical Support Procedures

Before contacting Technical Support, please make sure that you have followed all the steps listed below. Also, Note that as a motherboard manufacturer, Supermicro

does not sell directly to end users, so it is best to first check with your distributor or reseller for troubleshooting services. They should know of any possible problem(s) with the specific system configuration that was sold to you.

1. Please go through the 'Troubleshooting Procedures' and 'Frequently Asked Question' (FAQ) sections in this chapter or see the FAQs on our website (http://www.supermicro.com/support/faqs/) before contacting Technical Support.

2. BIOS upgrades can be downloaded from our website at (http://www.supermicro.com/support/bios/).

   Note: Not all BIOS can be flashed. Some cannot be flashed; it depends on the boot block code of the BIOS.

3. If you've followed the instructions above to troubleshoot your system, and still cannot resolve the problem, then contact Supermicro's technical support and provide them with the following information:

- Motherboard model and PCB revision number
- BIOS release date/version (this can be seen on the initial display when your system first boots up)
- System configuration
- An example of a Technical Support form is on our website at (http://www.supermicro.com/support/contact.cfm).

4. Distributors: For immediate assistance, please have your account number ready when placing a call to our technical support department. We can be reached by e-mail at support@supermicro.com, by phone at: (408) 503-8000, option 2, or by fax at (408)503-8019.

3-3 Frequently Asked Questions

Question: What type of memory does my motherboard support?

Answer: The C7H61 supports up to 32GB of unbuffered Non-ECC DDR3 SDRAM (1.5V, 1333/1066 MHz). See Section 2-3 for details on installing memory.

Question: How do I update my BIOS?

Answer: We do NOT recommend that you upgrade your BIOS if you are not experiencing any problems with your system. Updated BIOS files are located on

our website at http://www.supermicro.com/support/bios/. Please check our BIOS warning message and the information on how to update your BIOS on our web site. Select your motherboard model and download the BIOS ROM file to your computer. Also, check the current BIOS revision to make sure that it is newer than your BIOS before downloading. You may choose the zip file or the .exe file. If you choose the zipped BIOS file, please unzip the BIOS file onto a bootable device or a USB pen/thumb drive. To flash the BIOS, run the batch file named "ami.bat" with the new BIOS ROM file from your bootable device or USB pen/thumb drive. Use the following format:

F:\> ami.bat BIOS-ROM-filename.xxx <Enter>

Note: Always use the file named "ami.bat" to update the BIOS, and insert a space between "ami.bat" and the filename. The BIOS-ROM-filename will bear the motherboard name (i.e., C7H61) and build version as the extension. For example, "C7H610.115".When completed, your system will automatically reboot.

If you choose the .exe file, please run the .exe file under Windows to create the BIOS flash floppy disk. Insert the floppy disk into the system you wish to flash the BIOS. Then, boot the system to the floppy disk. The BIOS utility will automatically flash the BIOS without any prompts. Please note that this process may take a few minutes to complete. Do not be concerned if the screen is paused for a few minutes.

When the BIOS flashing screen is completed, the system will reboot and will show "Press F1 or F2". At this point, you will need to load the BIOS defaults. Press <F1> to go to the BIOS setup screen, and press <F9> to load the default settings. Next, press <F10> to save and exit. The system will then reboot.

Warning: Do not shut down or reset the system while updating the BIOS to prevent possible system boot failure!

Important: The SPI BIOS chip installed on this motherboard is not removable. To repair or replace a damaged BIOS chip, please send your motherboard to RMA at Supermicro for service.

Question: I think my BIOS is corrupted. How can I recover my BIOS?

Answer: Please see Appendix C-BIOS Recovery for detailed instructions.

Question: What's on the CD that came with my motherboard?

Answer: The supplied compact disc has quite a few drivers and programs that will greatly enhance your system. We recommend that you review the CD and install the applications you need. Applications on the CD include chipset drivers for Windows, security programs, and audio drivers.

Question: What is the heatsink part number for my C7H61 motherboard?

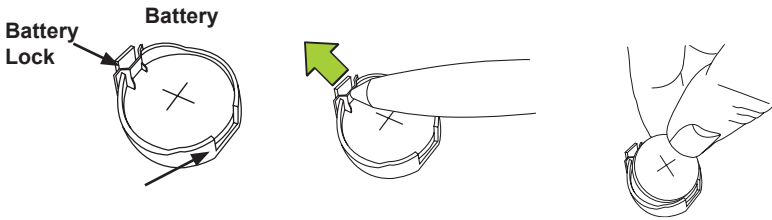
Answer: For the 1U passive heatsink, ask for SNK-P0046P (back plate is included). For the 2U active heatsink, use SNK-P0046A4.

3-4 Battery Removal and Installation

Battery Removal

To remove the onboard battery, follow the steps below:

1. Power off your system and unplug your power cable.
2. Locate the onboard battery as shown below.
3. Using a tool such as a pen or a small screwdriver, push the battery lock outwards to unlock it. Once unlocked, the battery will pop out from the holder.
4. Remove the battery.



Proper Battery Disposal

Warning! Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

Battery Installation

1. To install an onboard battery, follow the steps 1& 2 above and continue below:

2. Identify the battery's polarity. The positive (+) side should be facing up.

3. Insert the battery into the battery holder and push it down until you hear a click to ensure that the battery is securely locked.

Warning: When replacing a battery, be sure to only replace it with the same type.

Battery Holder

3-5 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. For faster service, you may also obtain RMA authorizations online (http://www.supermicro.com/support/rma/). When you return the motherboard to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alteration, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

Chapter 4

BIOS

4-1 Introduction

This chapter describes the AMI BIOS Setup Utility for the C7H61. The ROM BIOS is stored in a Flash EEPROM and can be easily updated. This chapter describes the basic navigation of the AMI BIOS Setup Utility setup screens.

Note: For AMI BIOS Recovery, please refer to the UEFI BIOS Recovery Instructions in Appendix C.

Starting BIOS Setup Utility

To enter the AMI BIOS Setup Utility screens, press the <Delete> key while the system is booting up.

Note: In most cases, the <Delete> key is used to invoke the AMI BIOS setup screen. There are a few cases when other keys are used, such as <F1>, <F2>, etc.

Each main BIOS menu option is described in this manual. The Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured. Options in blue can be configured by the user. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it. (**Note**: the AMI BIOS has default text messages built in. Supermicro retains the option to include, omit, or change any of these text messages.)

The AMI BIOS Setup Utility uses a key-based navigation system called "hot keys". Most of the AMI BIOS setup utility "hot keys" can be used at any time during the setup navigation process. These keys include <F1>, <F10>, <Enter>, <ESC>, arrow keys, etc.

Note: Options printed in **Bold** are default settings.

How To Change the Configuration Data

The configuration data that determines the system parameters may be changed by entering the AMI BIOS Setup utility. This Setup utility can be accessed by pressing <Del> at the appropriate time during system boot.

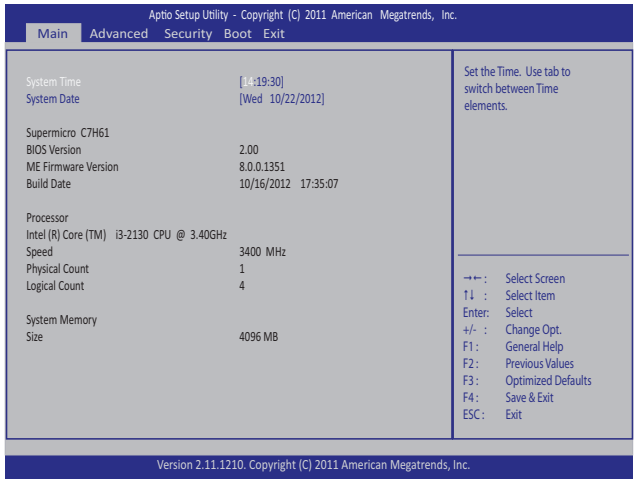
How to Start the Setup Utility

Normally, the only visible Power-On Self-Test (POST) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the AMI BIOS Setup Utility. From the main menu, you can access the other setup screens. An AMI BIOS identification string is displayed at the left bottom corner of the screen, below the copyright message.

Warning! Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall Supermicro be liable for direct, indirect, special, incidental, or consequential damages arising from a BIOS update. If you have to update the BIOS, do not shut down or reset the system while the BIOS is updating. This is to avoid possible boot failure.

4-2 Main Setup

When you first enter the AMI BIOS Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab on the top of the screen. The Main BIOS Setup screen is shown below.



System Overview: The following BIOS information will be displayed:

System Time/System Date

Use this option to change the system time and date. Highlight *System Time* or *System Date* using the arrow keys. Enter new values through the keyboard. Press the <Tab> key or the arrow keys to move between fields. The date must be entered in Day MM/DD/YY format. The time is entered in HH:MM:SS format.

Note: The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00.

The following BIOS items will also be displayed:

Supermicro C7H61

BIOS Version

ME Firmware Version

Build Date

Processor

The AMI BIOS will automatically display the status of the processor used in the motherboard as shown below:

Type of Processor

Speed

Physical Count

Logical Count

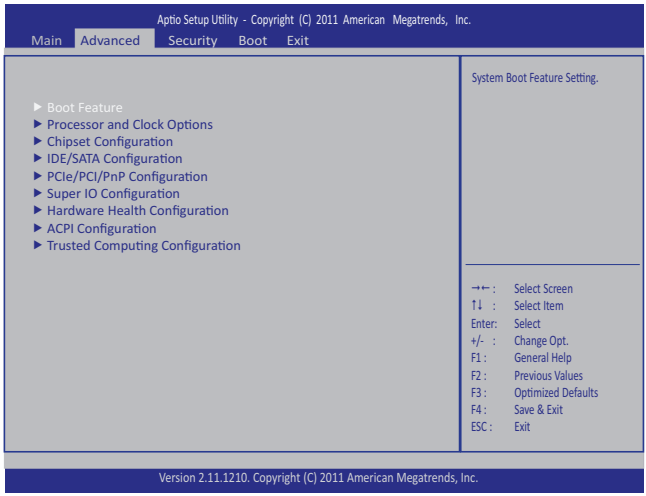
System Memory

This displays the size of memory available in the system:

Size

4-3 Advanced Setup Configurations

Use the arrow keys to select Boot Setup and press <Enter> to access the submenu items:



▶Boot Feature

Quiet Boot

Use this feature to select the screen display between POST messages or the OEM logo at bootup. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages. The options are **Enabled** and Disabled.

AddOn ROM Display Mode

Use this feature to set the display mode for Option ROM. The options are **Force BIOS** and Keep Current.

Bootup Num-Lock

This feature selects the Power-on state for the Numlock key. The options are Off and **On**.

Wait For 'F1' If Error

This forces the system to wait until the 'F1' key is pressed if an error occurs. The options are Disabled and **Enabled**.

Interrupt 19 Capture

Interrupt 19 is the software interrupt that handles the boot disk function. When this item is set to Enabled, the ROM BIOS of the host adaptors will "capture" Interrupt 19 at bootup and allow the drives that are attached to these host adaptors to function as bootable disks. If this item is set to Disabled, the ROM BIOS of the host adaptors will not capture Interrupt 19, and the drives attached to these adaptors will not function as bootable devices. The options are **Enabled** and Disabled.

Power Configuration

Watch Dog Function

If enabled, the Watch Dog timer will allow the system to automatically reboot when a non-recoverable error occurs that lasts for more than five minutes. The options are Enabled and **Disabled.**

Power Button Function

This feature controls how the system shuts down when the power button is pressed. Select 4_Seconds_Override for the user to power off the system after pressing and holding the power button for 4 seconds or longer. Select Instant Off to instantly power off the system as soon as the user presses the power button. The options are 4 Seconds Override and **Instant Off.**

Restore on AC Power Loss

Use this feature to set the power state after a power outage. Select Stay-Off for the system power to remain off after a power loss. Select Power On for the system power to be turned on after a power loss. Select Last State to allow the system to resume its last power state before a power loss. The options are Power On, Stay Off and **Last State**.

Resume on RTC Alarm

This feature enables or disables system resume on RTC (Real Time Clock) alarm. The options are **Disabled** and Enabled.

▶Processor & Clock Options

Warning: Take Caution when changing the Advanced settings. An incorrect value, a very high DRAM frequency or an incorrect DRAM timing setting may cause system to become unstable. When this occurs, revert to the setting to its manufacture default setting.

Clock Spread Spectrum

If Enabled, the BIOS will monitor the level of Electromagnetic Interference caused by the components and will attempt to decrease the interference whenever needed. The options are Enabled and **Disabled**.

Hardware Prefetcher (Available when supported by the CPU)

If set to Enabled, the hardware prefetcher will prefetch streams of data and instructions from the main memory to the L2 cache to improve CPU performance. The options are Disabled and **Enabled**.

Adjacent Cache Line Prefetch (Available when supported by the CPU)

Select Enabled for the CPU to prefetch both cache lines for 128 bytes as comprised. Select Disabled for the CPU to prefetch both cache lines for 64 bytes. The options are Disabled and **Enabled**.

Intel® Virtualization Technology (Available when supported by the CPU)

Select Enabled to use the Intel Virtualization Technology to allow one platform to run multiple operating systems and applications in independent partitions, creating multiple "virtual" systems in one physical computer. The options are **Enabled** and Disabled.

Note: If there is any change to this setting, you will need to power off and restart the system for the change to take effect. Please refer to Intel's web site for detailed information.

Execute-Disable Bit Capability (Available when supported by the OS and the CPU)

Set to Enabled to enable the Execute Disable Bit which will allow the processor to designate areas in the system memory where an application code can execute and where it cannot, thus preventing a worm or a virus from flooding illegal codes to overwhelm the processor or damage the system during an attack. The default is **Enabled**. (Refer to Intel and Microsoft Web Sites for more information.)

Intel® AES-NI

This feature enables or disables the processor's Advanced Encryption Standard support. The options are **Disabled** and Enabled**.**

Intel® Hyper Threading Technology (Available when supported by the OS and the CPU)

Select Enabled to enable Hyper_Threading support to increase CPU performance. The options are **Enabled** and Disabled.

Active Processor Cores

Enables selection of the number of the processor's core to acivate. (Please refer to Intel's web site for more information.) The options are **All,** 1, 2, and 3.

Power Technology

Use this feature to select a power-saving scheme for the motherboard. The options are Disabled, **Energy Efficient** and Custom. If Custom is selected, the following options become available:

EIST

EIST (Enhanced Intel SpeedStep Technology) allows the system to automatically adjust processor voltage and core frequency in an effort to reduce power consumption and heat dissipation. **Please refer to Intel's web site for detailed information.** The options are Disabled and **Enabled**.

P-STATE Coordination

This feature selects the type of coordination for the P-State of the processor. P-State is a processor operational state that reduces the processor's voltage and frequency. This makes the processor more energy efficient, resulting in further energy gains. The options are **HW_ALL**, SW_ALL and SW-ANY.

CPU C3 Report

Select Enabled for the CPU to report C3 (ACPI C2) state to the operating system. The options are **Disabled** and Enabled.

CPU C6 Report

Select Enabled for the CPU to report C6 (ACPI C3) state to the operating system. The options are Disabled and **Enabled**.

Package C-State limit

Select Auto for the AMI BIOS to automatically set the limit on the C-State package register. The options are C0, C2, C6, C7 and **No Limit**.

▶Turbo Boost Technology (Available when Intel® EIST technology is Enabled)

This feature allows processor cores to run faster than marked frequency in specific conditions.

Factory Long Duration Power Limit

This feature displays the value of the processor power consumption limit (in Watts) set by the manufacturer for a long duration time window.

Long Duration Power Limit

Use this feature to set the processor power consumption limit (in Watts) value for a long duration time window.

Factory Long Duration Maintained

This feature displays the manufacture-preset time value in milliseconds when the Long Duration Power Limit is maintained.

Long Duration Maintained

Use this feature to set the time value when the Long Duration Power Limit is maintained.

Recommended Short Duration Power Limit

The system's power consumption may exceed the processor's default power setting and the Short Duration Power Limit when operating in the turbo mode. This feature displays the Short Duration Power Limit value recommended by the manufacturer for turbo mode operation. By increasing this value, the processor can provide better performance for a short duration operation. The default setting is **1.25* Long Duration** (that means, 1.25 times the value of Long Duration Power Limit indicated above.)

Short duration power limit

The system's power consumption may exceed the processor's default power setting and the Short Duration Power Limit when operating in the turbo mode. By increasing this value, the processor can provide better performance for a short duration operation.

▶Chipset Configuration

WARNING: Setting the wrong values in the following sections may cause the system to malfunction.

▶CPU Bridge Configuration

This item displays the current CPU Revision, Current CPU1 Memory Frequency, Memory Type and Memory Reference Code Revision.

Memory Frequency

This feature allows the user to select the memory speed. Under normal conditions, please set this to Auto. The options are **Auto**, Force DDR-800Mhz, Force DDR-1066Mhz, and Force DDR-1333Mhz.

▶System Agent Configuration

This item displays the current North Bridge Revision.

VT-d

Select Enabled to enable Intel's Virtualization Technology support for Direct I/O VT-d by reporting the I/O device assignments to VMM through the DMAR ACPI Tables. This feature offers fully-protected I/O resource-sharing across the Intel platforms, providing the user with greater reliability, security and availability in networking and data-sharing. The settings are Enabled and **Disabled**.

PCI Express Port

This feature can force to enable or disable the onboard PCI Express port. The options are Disabled, Enabled and **Auto.**

PEG Force Gen1

This feature forces Gen1 support on the PCI Express Graphics (PEG) port. The options are **Disabled**, and Enabled**.**

Detect Non-Compliant Device

This feature enables or disables the detection of a non-compliant device that is attached to the PCI Express Graphics (PEG) port. The options are **Disabled**, and Enabled**.**

Initiate Graphic Adapter

This feature selects which graphics controller to use as a boot device. The options are IGD, PCI/IGD, PCI/PEG, **PEG/IGD** and PEG/PCI.

Note: IGD = Integrated Graphics Device.

IGD Memory

This feature selects the amount of memory for the Integrated Graphics Device (IGD). The options are Disabled, 32M, **64M** and 128M.

Render Standby

This feature enables or disables render standly by the Internal Graphics Device (IGD). The options are Disabled and **Enabled**.

IGD Multi-Monitor

This feature enables or disables multi-monitor support by the Internal Graphics Device (IGD). The options are **Disabled** and Enabled.

Memory Remap

This feature enables or disables the memory above 4GB. The options are **Enabled** and Disabled.

▶South Bridge Configuration

This item displays the current South Bridge configuration.

GbE Controller

Select Enabled to enable the onboard gigabit Ethernet controller. The settings are **Enabled** and Disabled.

Load Onboard LAN2

This feature enables or disables the onboard ROM option for LAN2. The options are Disabled and **Enabled**.

Wake on LAN from S5

Select Enabled to enable the capabiltiy to 'wake-up' the system from the S5 power state (Soft Off State) through the Ethernet controller. The settings are **Enabled** and Disabled.

USB Functions

This feature will enable or disable the motherboard's USB functions. The options are **Enabled** and Disabled. If enabled, the following options are available:

Legacy USB Support

This feature enables support for legacy USB devices. Select Auto to disable legacy support if USB devices are not present. Select Disable to have USB devices available only for EFI applications. The options are **Enabled,** Disabled and Auto.

Port 60/64 Emulation

This feature enables or disables I/O port 60h/64h emulation support. This should be enabled for complete USB keyboard legacy support for non-USB-aware Operating Systems. The options are Disabled and **Enabled**.

BIOS EHCI Hand-Off

This item is for Operating Systems that does not support Enhanced Host Controller Interface (EHCI) hand-off. When enabled, EHCI ownership change will be claimed by the EHCI driver. The settings are **Enabled** and Disabled.

Azalia HD Audio

Select Enabled to enable the Azalia High Definition Audio feature. The settings are **Enabled** and Disabled.

Azalia Internal HDMI Codec

Select Enabled to enable the internal HDMI CODEC (Coder-Decoder) for Azalia. The settings are **Enabled** and Disabled.

Frontside Audio Mode

This feature selects the type of audio output on the frontside audio header/ interface. Select **HD Audio** for High Definition, otherwise select AC '97 for legacy audio.

Deep Sx

Select Enabled to enable Deep Sleep State support. The settings are Enabled and **Disabled.**

▶On Board Chip Configuration

This item displays the On Board Chip options.

▶ASMedia 1061 SATA Controller

ASMedia 1061 SATA Controller

Select Enabled to activate the on board ASMedia SATA controller. The settings are **Enabled** and Disabled.

▶ASMedia 1085 PCIe to PCI Bridge

ASMedia PCIe to PCI Bridge

Select Enabled to allow a PCI-based application to plug into a PCIe-based system. The settings are **Enabled** and Disabled.

PCI Slot 1 ~ PCI Slot 5 Device Enable

Select Enabled to enable the PCI device on the selected slot. The settings are Disabled and **Enabled**.

▶Renesas 720202 XHCI Controller

Renesas 720202 XHCI Controller

Select Enabled to activate the on board Renesas XHCI controller. The settings are **Enabled** and Disabled.

USB 3.0 Legacy Support

This feature enables support for legacy USB devices on the USB 3.0 ports. The options are **Enabled** and Disabled.

XHCI Hand-off

Select Enabled for Operating Systems without XHCI hand-off support. The XHCI ownership change will be claimed by the XHCI driver. The settings are **Enabled** and Disabled.

▶IDE/SATA Configuration

When this submenu is selected, the AMI BIOS automatically detects the presence of the IDE Devices and displays the following items:

SATA Mode

This item selects the mode for the installed drives. The options are Disabled, IDE Mode, and **AHCI Mode**.

AHCI Mode

The following items are displayed when AHCI Mode is selected:

Aggressive Link Power Management

This feature Enables or Disables Agressive Link Power Management support for Cougar Point B0 stepping and later. The options are **Enabled** and Disabled.

SATA Port0~Port3

This item displays the information detected on the installed SATA drives on the particular SATA port.

Staggered Spin Up

Set this item to Enabled to enable Staggered Spin-up support. The options are **Enabled** and Disabled.

Hot Plug

Set this item to Enabled to enable hot-plugging. The options are Enabled and **Disabled**.

IDE Mode

The following items are displayed when IDE Mode is selected:

Serial-ATA Controller 0~1

This feature is used to activate/deactivate the SATA controller, and sets the compatibility mode. The options are Disabled, Enhanced and **Compatible**. The default of Serial-ATA Controller 1 is **Enhanced**.

SATA Port0~Port3

This item displays the information detected on the installed SATA drives on the particular SATA port.

▶PCIe/PCI/PnP Configuration

This feature allows the user to set the PCI/PnP configurations for the following items:

PCI ROM Priority

When there are multiple Option ROMs (Legacy and EFI compatible), this feature specifies what Option ROM to launch. The options are **Legacy ROM** and EFI Compatible ROM.

PCI Latency Timer

This feature sets the latency Timer of each PCI device installed on a PCI bus. Select 64 to set the PCI latency to 64 PCI bus clock cycles. The options are 32 PCI Bus Clocks, **64 PCI Bus Clocks**, 96 PCI Bus Clocks, 128 PCI Bus Clocks, 160 PCI Bus Clocks, 192 PCI Bus Clocks, 224 PCI Bus Clocks and 248 PCI Bus Clocks.

Active State Power Management

Select Enabled to enable Active-State Power Management for signal transactions between L0 and L1 Links on the PCI Express Bus in order to maximize power-saving and transaction speeds. The options are **Disabled**, Auto, and Force L0.

PCIe Max Read Request Size

This item manually sets the maximum read request size of the PCI Express device or allows the system BIOS to choose the value (Auto). The options are **Auto**, 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes and 4096 Bytes.

PCI Slot 1, 2, 3, 4, 5 Option ROM

Use this feature to enable or disable PCI slot Option ROMs. The options are Disabled and **Enabled.**

PCIe Slot 6 & 7 Option ROM

Use this feature to enable or disable PCIe slot Option ROMs. The options are Disabled and **Enabled.**

Load Onboard LAN1/LAN2 Option ROM

This feature enables or disables the onboard ROM option for LAN1 and LAN2. The options are **Disabled** and Enabled.

▶Super IO Configuration

Nuvoton LPC I/O - NCT6776F

Serial Port 1 / Serial Port 2

Select Enabled to enable the onboard serial port. The options are **Enabled** and Disabled.

Serial Port 1 Settings

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 1. Select Auto to let the BIOS automatically assign the base I/O and IRQ address.

The options for Serial Ports 1 and 2 are **Auto**, (IO=3F8h; IRQ=4), (IO=3F8h; IRQ=3, 4, 10, 11), (IO=2F8h; IRQ=3, 4, 10, 11), (IO=3E8h; IRQ=3, 4, 10, 11) and (IO=2E8h; IRQ=3, 4, 10, 11).

Serial Port 2 Settings

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 2. Select Auto to let the BIOS automatically assign the base I/O and IRQ address.

The options for Serial Ports 1 and 2 are **Auto**, (IO=2F8h; IRQ=3), (IO=3F8h; IRQ=3, 4, 10, 11), (IO=2F8h; IRQ=3, 4, 10, 11), (IO=3E8h; IRQ=3, 4, 10, 11) and (IO=2E8h; IRQ=3, 4, 10, 11).

PS2 KB/MS Wake up

This feature is used to awaken the system from Standby mode by a PS/2 mouse or PS/2 keyboard. This must be enabled in the system level and Operating System (O/S) as well, if supported).

S1 (OS Control) - Enables system wake up from S1 (default).

S5 (OS Control) - Enables system wake up from S1/S3/S4/S5.

Force Enable - Wake up support is always enabled regardless whether it is disabled in the O/S.

Force Disable - Wake up support is always disabled regardless whether it is enabled in the O/S.

Nuvoton LPC I/O - NCT6106D

Serial Port 3

Select Enabled to enable the onboard serial port. The options are **Enabled** and Disabled.

Serial Port 3, Settings

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 3. Select Auto to let the BIOS automatically assign the base I/O and IRQ address.

The options for Serial Port 3 are **Auto**, (IO=240h; IRQ=11), (IO=240h; IRQ=10, 11, 12), (IO=248h; IRQ=10, 11, 12), (IO=250h; IRQ=10, 11, 12) and (IO=258h; IRQ=10, 11, 12), (IO=260h; IRQ=10, 11, 12), (IO=268h; IRQ=10, 11, 12).

Serial Port 3/Port 4 Mode

Use this feature to change the serial port mode for serial ports 3 and 4 simultaneously. The options are **RS232** Mode, RS485 Mode, and RS422 Mode.

Serial Port 4

Select Enabled to enable the onboard serial port. The options are **Enabled** and Disabled.

Serial Port 4, Settings

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 4. Select Auto to let the BIOS automatically assign the base I/O and IRQ address.

The options for Serial Port 4 are **Auto**, (IO=248h; IRQ=11), (IO=240h; IRQ=10, 11, 12), (IO=248h; IRQ=10, 11, 12), (IO=250h; IRQ=10, 11, 12) and (IO=258h; IRQ=10, 11, 12), (IO=260h; IRQ=10, 11, 12), (IO=268h; IRQ=10, 11, 12).

Serial Port 3/Port 4 Mode

Use this feature to change the serial port mode for serial ports 3 and 4 simultaneously. The options are **RS232** Mode, RS485 Mode, and RS422 Mode.

Serial Port 5

Select Enabled to enable the onboard serial port. The options are **Enabled** and Disabled.

Serial Port 5, Settings

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 5. Select Auto to let the BIOS automatically assign the base I/O and IRQ address.

The options for Serial Port 5 are **Auto**, (IO=250h; IRQ=11), (IO=240h; IRQ=10, 11, 12), (IO=248h; IRQ=10, 11, 12), (IO=250h; IRQ=10, 11, 12) and (IO=258h; IRQ=10, 11, 12), (IO=260h; IRQ=10, 11, 12), (IO=268h; IRQ=10, 11, 12).

Serial Port 6

Select Enabled to enable the onboard serial port. The options are **Enabled** and Disabled.

Serial Port 6, Settings

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 6. Select Auto to let the BIOS automatically assign the base I/O and IRQ address.

The options for Serial Port 6 are **Auto**, (IO=258h; IRQ=11), (IO=240h; IRQ=10, 11, 12), (IO=240h; IRQ=10, 11, 12), (IO=250h; IRQ=10, 11, 12) and (IO=258h; IRQ=10, 11, 12), (IO=260h; IRQ=10, 11, 12), (IO=268h; IRQ=10, 11, 12).

Serial Port 7

Select Enabled to enable the onboard serial port. The options are **Enabled** and Disabled.

Serial Port 7, Settings

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 7. Select Auto to let the BIOS automatically assign the base I/O and IRQ address.

The options for Serial Port 7 are **Auto**, (IO=260h; IRQ=11), (IO=240h; IRQ=10, 11, 12), (IO=248h; IRQ=10, 11, 12), (IO=250h; IRQ=10, 11, 12) and (IO=258h; IRQ=10, 11, 12), (IO=260h; IRQ=10, 11, 12), (IO=268h; IRQ=10, 11, 12).

Serial Port 8

Select Enabled to enable the onboard serial port. The options are **Enabled** and Disabled.

Serial Port 8, Settings

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 8. Select Auto to let the BIOS automatically assign the base I/O and IRQ address.

The options for Serial Port 8 are **Auto**, (IO=268h; IRQ=11), (IO=240h; IRQ=10, 11, 12), (IO=248h; IRQ=10, 11, 12), (IO=250h; IRQ=10, 11, 12) and (IO=258h; IRQ=10, 11, 12), (IO=260h; IRQ=10, 11, 12), (IO=268h; IRQ=10, 11, 12).

Parallel Port

Select Enabled to enable the parallel port. The options are **Enabled** and Disabled.

Parallel Port Settings

This option specifies the base I/O port address and the Interrupt Request address of the parallel port. Select Auto to let the BIOS automatically assign the base I/O and IRQ address.

The options for the parallel port are **Auto**, (IO=378h; IRQ=5; DMA=3), (IO=378h; IRQ=5, 6, 7, 10, 11, 12; DMA=1, 3), (IO=278h; IRQ=5, 6, 7, 10, 11, 12; DMA=1, 3), (IO=3BCh; IRQ=5, 6, 7, 10, 11, 12; DMA=1, 3).

Parallel Port Mode

Use this feature to change the printer port mode . The options are STD Printer Mode, SPP Mode, EPP-1.9 and SPP Mode, EPP-1.7 and SPP Mode, ECP Mode, **ECP and EPP 1.9 Mode**, ECP and EPP 1.7 Mode.

▶Hardware Health Configuration

Fan Speed Control Mode

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase for effective system cooling. Select "Full Speed" to allow the onboard fans to run at full speed (of 100% Pulse Width Modulation Duty Cycle) for maximum cooling. This setting is recommended for special system configuration or debugging. Select "Standard" for the onboard fans to run at 50% of the Initial PWM Cycle in order to balance the needs between system cooling and power saving. This setting is recommended for regular systems with normal hardware configurations. The options are Full Speed (@100% of PWM Cycle), and **Standard** (@50% of PWM Cycle).

CPU Temperature

This feature displays the CPU temperature status in text ("Low", "Medium" or "High"):

Low – This level is considered as the 'normal' operating state. The CPU temperature is well below the CPU 'Temperature Tolerance'. The motherboard fans and CPU will run normally as configured in the BIOS (Fan Speed Control).

User intervention: No action required.

Medium – The processor is running warmer. This is a 'precautionary' level and generally means that there may be factors contributing to this condition, but the CPU is still within its normal operating state and below the CPU 'Temperature Tolerance'. The motherboard fans and CPU will run normally as configured in the BIOS. The fans may adjust to a faster speed depending on the Fan Speed Control settings.

User intervention: No action is required. However, consider checking the CPU fans and the chassis ventilation for blockage.

High – The processor is running hot. This is a 'caution' level since the CPU's 'Temperature Tolerance' has been reached (or has been exceeded) and may activate an overheat alarm:

The information provided above is for your reference only. For more information on thermal management, please refer to Intel's Web site at www.Intel.com.

System Temperature / Peripheral Temperature

This feature displays the temperature readings from the system sensor (chassis) and peripheral devices.

Fan 1 ~ Fan 4 Speed

This feature displays the fan speed readings from fan interfaces Fan1 through Fan4.

VCORE, 12V, VDIMM, 5VCC, VTT_CPU, AVCC, 3.3VCC, VSB, VBAT

This feature displays the current voltages of the above voltage monitors.

▶ACPI Configuration

Use this feature to configure Advanced Configuration and Power Interface (ACPI) power management settings for your system.

High Precision Event Timers

Select Enabled to activate the High Performance Event Timer (HPET) that produces periodic interrupts at a much higher frequency than a Real-time Clock (RTC) does in synchronizing multimedia streams, providing smooth playback and reducing the dependency on other timestamp calculation devices, such as an x86 RDTSC Instruction embedded in the CPU. The High Performance Event Timer is used to replace the 8254 Programmable Interval Timer. The options are **Enabled** and Disabled.

Suspend Mode

This setting allows you to configure the ACPI (Advanced Configuration and Power Interface) sleep state for your system when it is in the Suspend mode. The options are Suspend Disabled, **S1 (POS)**, and S3 (STR). S3 (STR) is the deepest sleep state in these options.

▶Trusted Computing

Trusted Computing Configuration

TPM Support

Select Enabled on this item and enable the TPM jumper on the motherboard to enable TPM support to improve data integrity and network security. The options are **Enabled** and Disabled.

TPM State

Select Enabled to enable TPM security settings to improve data integrity and network security. The options are **Disabled** and Enabled.

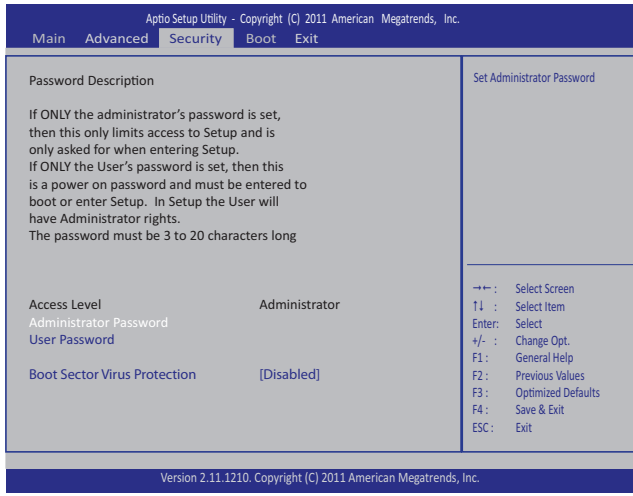
Pending Operation

Use this item to schedule an operation for the security device. The options are **None**, Enable Take Ownership, Disable Take Ownership, and TPM Clear.

Note: During restart, the computer will reboot in order to execute the pending operation and change the state of the security device.

Current Status Information: This item displays the information regarding the current TPM status.

4-3 Security Settings



- If the Administrator password is defined ONLY - this controls access to the BIOS setup ONLY.
- If the User's password is defined ONLY - this password will need to be entered during each system startup or boot, and will also have Administrator rights in the setup.
- Passwords must be at least 3 and up to 20 characters long.

Administrator Password

Press Enter to create a new, or change an existing Administrator password.

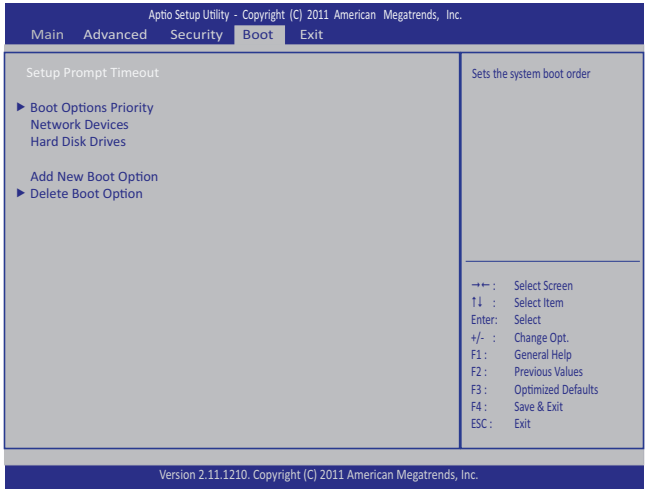
User Password:

Press Enter to create a new, or change an existing User password.

Boot Sector Virus Protection

When Enabled, the BIOS displays a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive. The options are Enabled and **Disabled**.

4-4 Boot Settings



Setup Prompt Timeout

Number of seconds to wait for setup activation key. Enter 65535 (0xFFFF) to wait indefinitely.

▶Boot Options Priority

This feature allows the user to specify which devices are boot devices and the order of priority from which the systems boots from during startup.

Boot Option #1, Boot option #2, Boot Option #3, etc

The settings are **Built-in EFI Shell**, [any detected boot device] and Disabled.

Network Devices, Hard Disk Drives

Boot Option #1, Boot option #2, Boot Option #3, etc.

Add New Boot Option

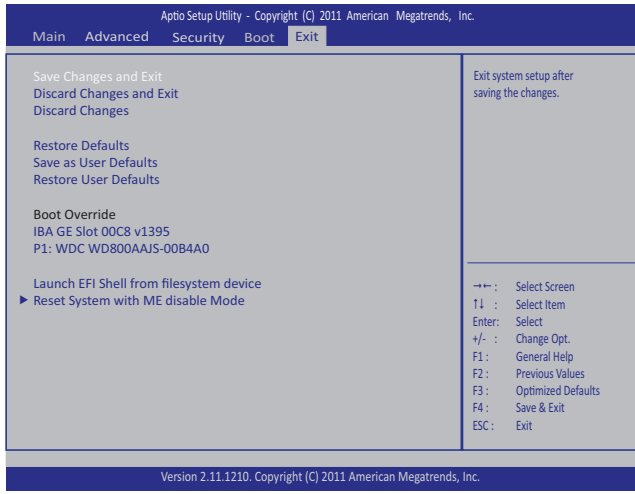
Use this feature to add a new boot device to the priority list.

▶Delete Boot Option

This feature allows the removal of a boot device and the order of priority from which the systems boots from during startup.

4-5 Exit Options

Select the Exit tab from the BIOS Setup Utility screen to enter the Exit BIOS Setup screen.



Save Changes and Exit

When you have completed the system configuration changes, select this option to leave the BIOS Setup Utility and reboot the computer, so the new system configuration parameters can take effect. Select Save Changes and Exit from the Exit menu and press <Enter>.

Discard Changes and Exit

Select this option to quit the BIOS Setup without making any permanent changes to the system configuration, and reboot the computer. Select Discard Changes and Exit from the Exit menu and press <Enter>.

Discard Changes

Select this option and press <Enter> to discard all the changes and return to the AMI BIOS Utility Program.

Restore Defaults

To set this feature, select Restore Defaults from the Exit menu and press <Enter>. These are factory settings designed for maximum system stability, but not for maximum performance.

Save As User Defaults

To set this feature, select Save as User Defaults from the Exit menu and press <Enter>. This enables the user to save any changes to the BIOS setup for future use

Restore User Defaults

To set this feature, select Restore User Defaults from the Exit menu and press <Enter>. Use this feature to retrieve user-defined settings that were saved previously.

Boot Override

Set this feature to override a previously defined boot device. The available devices will be listed below.

Launch EFI Shell from filesystem device

This feature when initiated, will attempt to launch an EFI shell application (shellx64.efi) from one of the available file system devices. Press <Enter> to activate.

▸Reset System with ME disabled Mode

If this feature is activated, the system will reset and temporarily disable ME. Press <Enter> to activate.

Appendix A

BIOS Error Beep Codes

During the POST (Power-On Self-Test) routines, which are performed each time the system is powered on, errors may occur.

Non-fatal errors are those which, in most cases, allow the system to continue with bootup. The error messages normally appear on the screen.

Fatal errors will not allow the system to continue to bootup. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

These fatal errors are usually communicated through a series of audible beeps. The numbers on the fatal error list correspond to the number of beeps for the corresponding error.

A-1 BIOS Error Beep Codes

BIOS Error Beep Codes		
Beep Code/LED	**Error Message**	**Description**
1 beep	Refresh	Circuits have been reset. (Ready to power up)
5 short beeps + 1 long beep	Memory error	No memory detected in the system
5 beeps	Display memory read/write error	Video adapter missing or with faulty memory
OH LED On	System OH	System Overheat

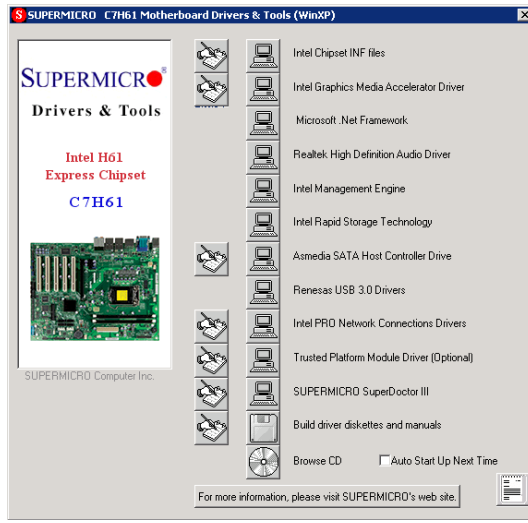
Notes

Appendix B

Software Installation Instructions

B-1 Installing Drivers

After you've installed the Windows Operating System, a screen as shown below will appear. You are ready to install software programs and drivers that have not yet been installed. To install these software programs and drivers, click the icons to the right of these items. (**Note**: To install the Windows Operating System, please refer to the instructions posted on our website at http://www.supermicro.com/support/manuals/.)



Driver/Tool Installation Display Screen

Note 1. Click the icons showing a hand writing on the paper to view the readme files for each item. Click on a computer icon to the right of an item to install this item (from top to the bottom), one at a time. After installing each item, you must reboot the system before proceeding with the next item on the list. The bottom icon with a CD on it allows you to view the entire contents of the CD.

Note 2. When making a storage driver diskette by booting into a Driver CD, please set the SATA Configuration to "Compatible Mode" and configure SATA as IDE in the BIOS Setup. After making the driver diskette, be sure to change the SATA settings back to your original settings.

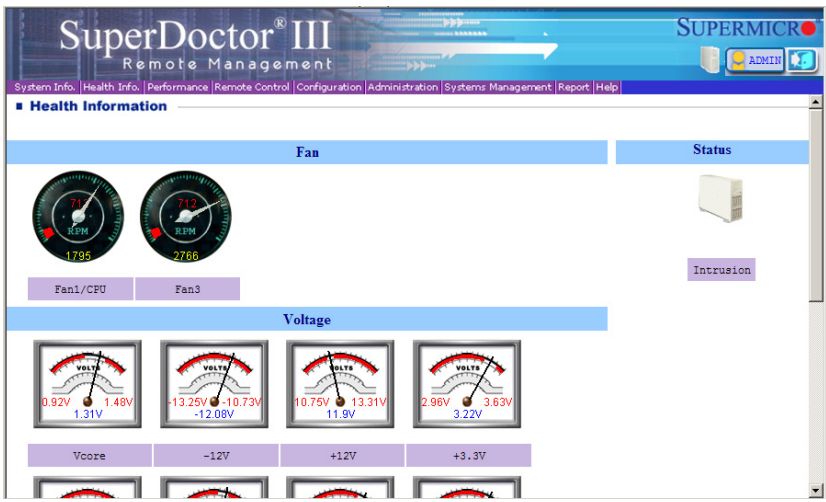
B-2 Configuring SuperDoctor® III

The SuperDoctor III program is a Web-based management tool that supports remote management capability. It includes Remote and Local Management tools. The local management tool is called the SD III Client. The SuperDoctor III program included on the CDROM that came with your motherboard allows you to monitor the environment and operations of your system. SuperDoctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the Figure below for a display of the SuperDoctor III interface.

Note: 1 The default user name and password are ADMIN.

Note 2: In the Windows OS environment, the SuperDoctor III settings take precedence over the BIOS settings. When first installed, SuperDoctor III adopts the temperature threshold settings previously set in BIOS. Any subsequent changes to these thresholds must be made within SuperDoctor, since the settings override the BIOS settings. For the Windows OS to adopt the BIOS temperature threshold settings, please change the SD III Client settings to be the same as those set in BIOS.

SuperDoctor III Interface Display Screen-I (Health Information)



SuperDoctor III Interface Display Screen-II (Remote Control)

Note: The SuperDoctor III software and manual may be downloaded from our Website at:

http://www.supermicro.com/products/accessories/software/SuperDoctorIII.cfm.

For Linux, we still recommend that you use SuperDoctor II, this version is also available for download at the link above.

Notes

Appendix C

UEFI BIOS Recovery Instructions

Warning! Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall Supermicro be liable for direct, indirect, special, incidental, or consequential damages arising from a BIOS update. If you need to update the BIOS, do not shut down or reset the system while the BIOS is updating to avoid possible boot failure.

C-1 An Overview to the UEFI BIOS

The Unified Extensible Firmware Interface (UEFI) specification provides a software-based interface between the operating system and the platform firmware in the pre-boot environment. The UEFI specification supports an architecture-independent mechanism for add-on card initialization to allow the UEFI OS loader, which is stored in the add-on card, to boot up the system. UEFI offers a clean, hand-off control to a computer system at bootup.

C-2 How to Recover the UEFI BIOS Image (-the Main BIOS Block)

An AMIBIOS flash chip consists of a boot sector block and a main BIOS code block (a main BIOS image). The boot sector block contains critical BIOS codes, including memory detection and recovery codes for the user to flash a new BIOS image if the original BIOS image is corrupted. When the system power is on, the boot sector codes execute first. Once it is completed, the main BIOS code will continue with system initialization and bootup.

Note: Follow the BIOS Recovery instructions below for BIOS recovery when the main BIOS block crashes. However, when the BIOS Boot sector crashes, you will need to send the motherboard back to Supermicro for RMA repair.

C-3 To Recover the Boot Sector Using a USB-Attached Device

This feature allows the user to recover a BIOS image using a USB-attached device without additional utilities used. A USB flash device such as a USB Flash Drive, or

a USB CD/DVD ROM/RW device can be used for this purpose. However, a USB Hard Disk drive cannot be used for BIOS recovery at this time.

To perform UEFI BIOS recovery using a USB-attached device, follow the instructions below.

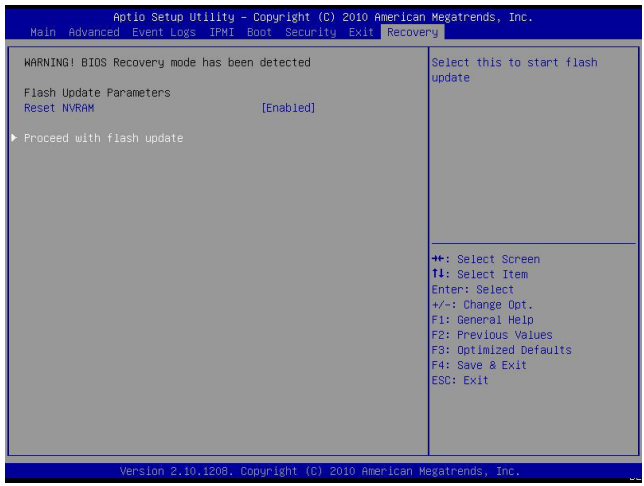
1. Using a different machine, copy the "Super.ROM" binary image file into the disc Root "\" Directory of a USB device or a writeable CD/DVD.

Note: If you cannot locate the "Super.ROM" file in your driver disk, visit our website at www.supermicro.com to download the BIOS image into a USB flash device and rename it to "Super ROM" for BIOS recovery use.

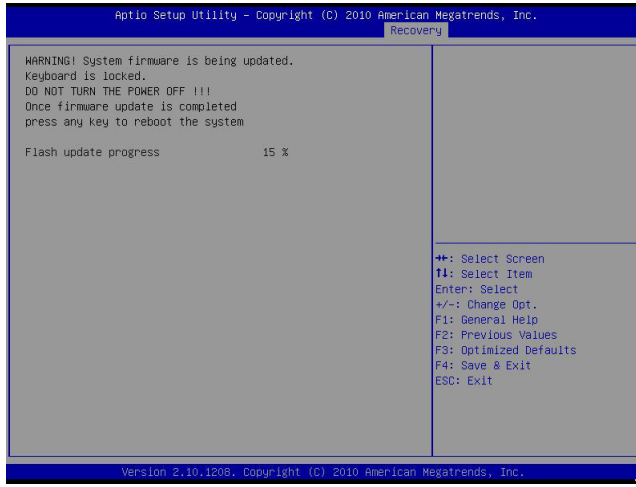
2. Insert the USB device that contains the new BIOS image ("Super.ROM") into your USB drive and power on the system

3. While powering on the system, keep pressing <Ctrl> and <Home> simultaneously on your PS2 keyboard until your hear two short beeps. This may take from a few seconds to one minute.

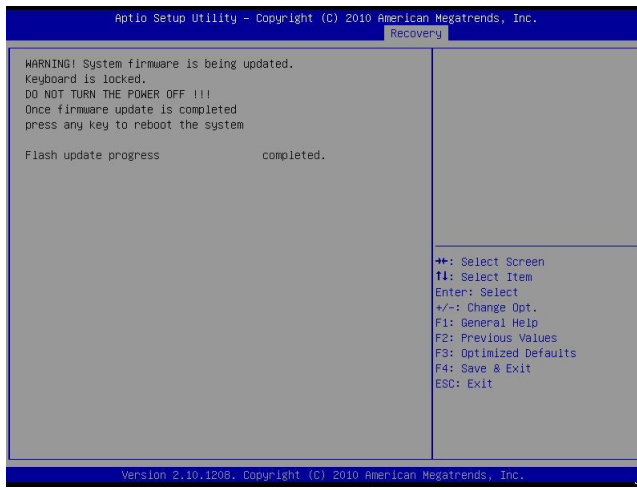
4. After locating the new BIOS binary image, the system will enter the BIOS Recovery menu as shown below.



Note: At this point, you may decide if you want to start with BIOS Recovery. If you decide to proceed with BIOS Recovery, follow the procedures below.



5. When the screen as shown above displays, using the arrow key, select the item- "Proceed with flash update" and press the <Enter> key. You will see the progress of BIOS Recovery as shown in the screen below.



Note: *Do not interrupt* the process of BIOS flashing until it is completed.

6. After the process of BIOS Recovery is complete, press any key to reboot the system.

7. Using a different system, extract the BIOS package into a bootable USB flash drive.

8. When a DOS prompt appears, enter AMI.BAT BIOSname.### at the prompt.

Note: *Do not interrupt this process* until BIOS flashing is completed.

9. After seeing the message that BIOS update is completed, unplug the AC power cable from the power supply to clear CMOS, and then plug the AC power cable in the power supply again to power on the system.

10. Press <Del> continuously to enter the BIOS Setup utility.

11. Press <F3> to load default settings.

12. After loading default settings, press <F4> to save the settings and exit the BIOS Setup utility.

(Disclaimer Continued)

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